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ABSTRACT

A variety of career education programs that use facilities in an innovative way are reported in this study of 21 programs. Through descriptions, photographs, and drawings, these programs are used to illustrate how educators can use facilities and equipment to support career education programs in classrooms from kindergarten through twelfth grade. The first three chapters discuss career education concepts and goals and show how these relate to the uses that may be made of facilities; discuss program planning issues that need to be considered in selecting, adapting, or developing facilities to support different types of programs; and describe the development of facilities to support the programs. Chapter 4 describes specific features of the 21 sample programs with emphasis on facilities. The descriptions include the issues and considerations that were found significant in each of the programs. Photographs and floor plans are included, as well as names and addresses of program administrators. The concluding chapter contains information sources, an annotated bibliography, and an index. (Author/MLF)

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NIE Papers in Education and Work: Number Two

FACILITIES HANDBOOK FOR CAREER EDUCATION

By

William B. Gill and Ann W. Luke

System Development Corporation

Santa Monica, California

October, 1976

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NIE PAPERS IN EDUCATION AND WORK

The National Institute of Education was created by Congress in 1972 to help solve problems in American education. One of the Institute's major program areas is education and work. As its name implies, the Education and Work Group sponsors research on the nature of the relationship between schooling and work. It also develops programs which aim at increasing the ability of youth and adults to choose, enter and progress in careers without regard to the barriers imposed by sex or race on career aspirations. In order to further professional understanding of these research and development activities, the Education and Work Group publishes a report series, NIE Papers in Education and Work. The following titles have been selected for publication; other titles are forthcoming:

1. The Development of Career Awareness in Young Children, by Aimee Dorr Leifer and Gerald S. Lesser of the Center for Research in Children's Television, Harvard Graduate School of Education.

2. Facilities Handbook for Career Education, by William B. Gill and Ann W. Luke of System Development Corporation.

3. Sex Discrimination in the Selection of School District Administrators: What Can Be Done?, by Doris M. Timpano of Career Women in Education and Louise W. Knight.

4. Entitlement Studies, by Henry Levin, Stanford University; John Honey, Syracuse University, and Norman Kurland, New York State Department of Education. (Available December, 1976.)

5. Education and Job Satisfaction: A Questionable Payoff, by Robert P. Quinn and Martha S. Baldi de Mandilovitch, Survey Research Center, The University of Michigan. (Available December, 1976.)

6. Paid Educational Leave: A Practical Way To Relate Work and Education and an Effective Way To Implement Life Long Learning, by Herbert Levine, Director of the Labor Education Center, Rutgers University. (Available December, 1976.)

OTHER EDUCATION AND WORK GROUP PUBLICATIONS

1. Education and Work Group: Fiscal Year 1977 Program Plan.

2. Education and Work Group: Select List of Products.

3. Answers to Questions Educators Ask About Career Education. (Available December, 1976.)

4. Issues of Sex Bias and Sex Fairness in Career Interest Measurement, edited by Esther E. Diamond.

5. Guidelines for Assessment of Sex Bias and Sex Fairness in Career Interest Inventories.

6. The Community Is the Teacher: Experience-Based Career Education.

7. The Career Intern Program: Interim Report (Two volumes--Volume I is titled Preliminary Results of an Experiment in Career Education and Volume II contains the technical appendix.) The final report will be available in early 1977.

8. Recurrent Education; edited by Selma J. Mushkin.

Single copies of all the above documents are available at no cost from the Education and Work Group, National Institute of Education, U. S. Department of Health, Education and Welfare, Washington, D. C. 20208. The postal cards at the back of this book may be used for ordering publications.

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INTRODUCTION

Many educators believe that career education should be integrated into all aspects of the regular school curriculum, beginning in kindergarten and continuing through adult education. Schools throughout the country are experimenting with career education programs; and many educators feel that the use of facilities and equipment can provide structure and support for these programs. Facilities for career education range from auto repair training centers to mobile units to career awareness centers in classrooms.

System Development Corporation (SDC), with funding from the National Institute of Education, has prepared this handbook to help administrators make effective use of facilities in developing and implementing career education programs. The book reports on a variety of career education programs for kindergarten through high school that use space or facilities in an imaginative or innovative way. The contents of the book are based on a study of 21 career education programs in schools throughout the country. These programs represent a range of approaches to the use of space and facilities for teaching students about careers. Visits were made to each of these programs, and the information gathered was supplemented by information in the literature. Through descriptions, photographs, and drawings, we have used these programs to illustrate how educators can use facilities and equipment to support career education programs in classrooms from kindergarten through twelfth grade. Concrete examples will permit readers to compare their own ideas and circumstances with functioning programs in more or less comparable settings.

The handbook illustrates what administrators can do to create an appropriate environment for career education in their districts and how to use community resources effectively. It also provides information on options that might be available if existing facilities are inadequate, such as modifying an existing facility, using "found space" in the community, or constructing a new facility.

The book is organized in five chapters:

Chapter I discusses career education concepts and goals and shows how these relate to the uses that may be made of facilities.

Chapter II discusses career education program planning issues that need to be considered in selecting, adapting, or developing facilities to support different types of career education programs.

Chapter III describes the development of facilities to support the programs.

Chapter IV describes specific features of the 21 sample programs, with emphasis on facilities, in a way that will allow readers to relate their needs and existing resources to those of the programs illustrated. The descriptions include the issues and considrations that were found significant in each of the programs. Photographs and floor plans are included, as well as names and addresses of program administrators, for readers who want more information.

An annotated bibliography is included at the end of the book, as Chapter V.

This handbook is designed as a reference tool for anyone who is planning or exploring career education programs in his or her school district.

I. CAREER EDUCATION: AN EVOLVING CONCEPT

Career Education is a concept of increasing importance for American public education, because of its emphasis on preparing all students to cope more effectively with the outside world after they leave high school, whether they go on to higher education or directly into the world of work. The basic principles and components of Career Education are not new; what is new is that there are more organized efforts, strongly encouraged by the federal government, to synthesize those principles and components into coherent, long-term school programs influencing the students' learning experiences through career education.

There is no single pattern of Career Education programs identifiable by specific curriculum content, materials, or facilities. Programs vary widely from district to district, depending on the special needs, priorities, and resources of those districts. In addition, program emphasis and components may vary with the age level of the participating students. However, most career education programs share some common goals. The five basic goals of Career Education have been stated as:

"1. Career education should help secure a better match between people's characteristics and desires, and the career opportunities available.

"2. Career education should help youngsters develop an awareness of adult roles and capabilities for fulfilling the requirements of those roles.

"3. Career education should enable compulsory public schooling to provide more diverse routes to recognized and rewarded masteries in school.

"4. Career education should help people comprehend, learn to cope with, and influence the economic-political-social system in which they live, both in the aggregate and as it affects them individually.

"5. Career education should provide students in secondary school with the opportunity to acquire skill and knowledge needed to support themselves honorably when they leave school."(1)

While there are many definitions of career education, most advocates question whether the traditional high school and junior college programs adequately prepare students for graduation. Career education proponents argue for a variety of programs to provide career information, experience, and skills to help students discover what their occupational interests are and what route they should take in pursuit of their goals.

Career Education challenges schools at all levels to assure that students exiting from high school have both a broad understanding of the world of work and the diverse skills required to succeed in it, and the option of getting a job, going on to college, or entering a more specialized training program.

In many of the Career Education programs operating around the country, there are three Career Education stages: career awareness, career exploration, and career preparation. These stages are not fixed in terms of grade level, and often occur simultaneously. Usually, education programs are organized so that the career information provided in earlier grades is more general and becomes more concentrated and focused as the students identify areas of particular interest. Learning experiences at each stage should be flexible enough so that they are appropriate for each individual's level of self-knowledge and ability. By definition, the activities connected with each stage differ. Each stage is discussed in detail below.

In the first stage, Career Awareness, students are exposed to the variety of occupations that make up the world of work. The goal is to make the students aware of a wide range of available work options and the relationship between work and the community they live in. Field trips to various on-site work locations are often used, to show students how people work at their jobs in the community. Parents of other community people may be brought into the classroom to discuss their occupations, and answer questions about them. Occupation-related activities may be introduced into the regular classroom instruction, such as simulating a factory assembly line. The underlying goals of these activities are to provide students with general career information such as the names of careers, where people work, what they do and the skills and abilities needed to perform that work, at the same time making academic subjects take on more meaning and relevance by relating them to the practical world of work.

Career Exploration is the second stage. Here, students are introduced to the concept that some jobs are interrelated and can be grouped according to function. Occupational "clusters" or skill groupings are an attempt to categorize the range of jobs available by common descriptive characteristics. While clusters show the interrelationship between jobs, they also show that within any one cluster the skills and knowledge required for any one job vary tremendously. This stage can feature hands-on experiences with a number of occupational selections, providing the student with as realistic a view as possible of the environment and activities of a particular occupation. It also gives students a chance to begin to compare their own temperament, aptitudes, and goals with the requirements and realities of occupation types, giving them an opportunity to try out aspects of certain occupations to see if they like them and are good at them.

The third stage, at the high school level, Career Preparation, can be broadly defined as including specific skill training for either entry level or more specialized jobs, or preparation for the wide range of post-secondary education programs.

Career Education programs attempt to keep the students' options open for as long as possible so that they are able to change career plans at later dates. Whether students choose employment or continued education, career education programs are beginning to play active roles in placement of students.

Emphasis on Guidance/Counseling

Because of the emphasis in career education on self-awareness and on students' occupational decisions, there is a major emphasis on guidance and counseling. Concern for the individual is not limited to his or her acquisition of a skill, but extends to the student's affective growth as well. In some programs, counseling is used, to help students come to grips with the complex maze of occupational options available. This gives them the opportunity to make choices, evaluate for themselves the outcomes of those choices, and make necessary adjustments.

The Evolution of Career Education and its Interaction With Schools and Communities

Career Education has been developing, and it will continue to be redefined as it is established in different forms in different schools. An important aspect of Career Education programs is their relationship with district and community. It implies new roles, both for students, who now will begin to work in occupational training settings in and out of the school, and for teachers and members of the community. As community businesses and organizations cooperate with the schools and accept students as part-time workers, many different individuals can serve as "instructors"; now, brickmasons, printers, newspapermen, shopowners, and bankers--people who have specialized job or skills training--can have a role in Career Education. These new roles signify an important key to the success or failure of Career Education efforts--the development of an educationally effective working partnership between the school and the individuals and organizations in the surrounding community.

As education is directed more and more toward the world outside the traditional confines of the school, the time and space requirements for learning may also be altered. The "standard" school-day schedule has already been challenged. For example, Urban High, in Las Vegas, Nevada, has added to the regular school schedule a special vocational program operating from 7:00 a.m. to midnight and on Saturdays, to permit students to focus on careers and still maintain school schedules. In addition to altering school schedules to accommodate special programs, Career Education has other features that have implications for the traditional school procedures; for example, placing students on jobs while they are still in school is a method adopted from earlier vocational educational programs. Career Education may use year-round programs, with more flexible credit-granting procedures. Career Education often expands opportunities for out-of-school learning, so that the school is no longer the sole setting for education. The community can also be used to provide learning experiences. Once the school begins to draw on the community, an important interchange of resources and ideas can take place.

Career Education can also benefit from a number of other interesting concepts that have so far not received wide acceptance on a national scale. These concepts include computer scheduling of work opportunities in community locations, modular scheduling, individually prescribed instruction, and computer-assisted instruction. These kinds of activities are especially relevant for the individual-oriented, easy access/exit goals of Career Education. These ideas, along with altered staffing patterns, such as team teaching and differentiated staffing, can help make Career Education fully operational.

Implications of Career Education for Facilities

The goals and characteristics of Career Education, as discussed above, have implications for the physical setting in which Career Education is to take place. An active learning process geared to the real world implies providing opportunities for students in diverse settings, both inside and outside the school. It implies providing physical activity as well as sitting and listening; this can mean, for example, providing tools and space in which to use them. The facility does not have to be expensive, new, or lavishly equipped. It might consist of an "invisible" network of placement locations in community businesses, service agencies, government facilities, and industries. Or it might be a modified classroom shop or laboratory in the school. On the other hand, the symbolic value of the built environment cannot be ignored; it communicates the significance of the effort to staff, students, and the community. As architect C. William Brubaker has noted, there may be good reasons for the location of Career Education in a highly visible physical setting as well--a setting that communicates the importance of the concept to the community and gives people a chance to observe it in action.(2) Visibility may also help to spread the concept. However, different programs will have different needs, and there will be cases where visibility is not important.

Career Education programs often involve hands-on experience or other kinds of activities. They may involve an emphasis on the development of the individual student. They may feature a lot of group activity, or they may involve teaching specific job skills. In all cases, the environment has a psychological impact: the environment must be a setting in which the student can develop career awareness or competence in a skill, as well as the self-confidence to make career decisions.

All of these activities--individualized instruction, simulation, the use of community resources--have environmental implications. For example, individualized instruction might require visual separation of students from one another; simulation might use special equipment, which, in turn, might require extra electrical outlets or special ventilation; the use of the community resources might imply the need for mobile units. Whatever the requirement, the environmental implications can be resolved in a variety of ways, depending on the particular needs of the program and the resources that are available. In some cases, new construction of facilities is most appropriate; in others, available facilities can be modified for use to suit the requirements of the program. Internal rearrangement of existing space, using partitions or new furnishings, may provide an appropriate environment for a Career Education program. In some cases, the structural modification and modernization of space already existing in the school district may provide the flexibility needed for Career Education activities. Alternatively, space might be located on a rental or purchase basis in the community itself, to serve multiple functions; for example, a vacant warehouse might be used for skills training. In special cases, mobile facilities may provide the solution to the problem of limited equipment resources that must be shared with a number of schools.

As the programs in this handbook illustrate, what Career Education calls for is often not so much new facilities as the different and creative uses of existing ones. For programs at the career awareness level, children may be brought to skills centers to study careers of many types and to learn to work together on various occupations. Mobile units or mini-buses are also effective in the K-6 range, taking children into the community to explore career options or bringing special equipment to the school. The classroom can also be used effectively, to provide space for role-playing, to involve parents in classroom work, and to allow the use of different media such as films to promote an awareness of careers. One program described in this book uses a greenhouse that shows students how to grow things, and also provides a forum for teaching about marketing and business, management, and bookkeeping. Another program that is illustrated uses a vacant drugstore as a Media Center on career education.

For most of these programs, the community has been an important resource, and extensive efforts have been made to involve local business and industry. In one district, the donation of booths and materials by community businesses was a major impetus to the program.

Programs for secondary school students, both junior and senior high school, emphasize exploration and preparation of career options, with opportunities for learning what it is like to have a particular job using certain skills; the activities frequently involve the community, where students practice skills that they have learned. Programs at the secondary level also involve hands-on experiences: one program, described in this book, has a professional print shop located in the school to give students experience in doing the tasks involved. Another uses outdoor playground space to train students in masonry skills.

A variety of other facilities and equipment can be used to achieve real career experiences: an old bus garage is used by one program as a Vocational Technical Center. In another, a vacant elementary school has been equipped with self-instructional career preparation booths and is used by students in the other schools throughout the district.

Career Education does not depend entirely on physical facilities for success; ultimately, the quality of the program will depend largely on the quality of the people involved in it--their talents, creativity, imagination, and commitment--and the kind of educational process they are able to engender. However, operationally planned physical arrangements can open opportunities that would otherwise be unavailable. How these opportunities are used is certainly a factor of funding and other resources, but it is also a factor of individual awareness of what can be done to the environment, with the materials and resources at hand, to gear the total curriculum toward the Career Education concept and to develop each individual's interests, abilities, and aspirations. This book shows how that environment can be used to meet the needs of different districts for Career Education programs.

This chapter provides an overview to the concept of Career Education; there are many publications devoted to the topic. For more in-depth discussion of Career Education, the reader is referred to works by Ressler (3), Hailey & Stadt (4), Edington & Conley (5), Hoyt et al.(6), Smoker (7), and USOE (8).

The development of a facility to support Career Education must follow the development of the program goals and requirements. The following chapter discusses this program planning process and how it is conducted.

Notes

1. Eisner, Schwab, and Walker. *Career Education: The State of the Idea and Its Prospects for the Future.*

2. Brubaker, C. William. *Spaces for Career Preparation: Facility Options.* Columbus, Ohio: Council of Educational Facility Planners Int'l. 1974.

3. Ressler, Ralph. *Career Education: The New Frontier.* Worthington, Ohio: Charles A. Jones Publishing, 1973.

4. Bailey, Larry J., and Ronald Stadt. *Career Education: New Approaches to Human Development.* Bloomington, Illinois: McKnight Publishing Company, 1973.

5. Edington, Everett D., and Howard K. Conley. *Career Education Handbook for Rural School Administrators.* Las Cruces, New Mexico: New Mexico State University, 1973.

6. Hoyt, Kenneth B., et al. *Career Education and the Elementary School Teacher.* Salt Lake City, Utah: Olympus Publishing Company, 1973.

7. Smoker, David. *Career Education: Current Trends in School Policies and Programs.* Arlington, Va.: National School Public Relations Assoc. 1974, p. 9.

8. USOE. *Career Education: A Handbook for Implementation.* Washington, D.C.: U.S. Govt. Printing Office, 1972.

II. THE PROGRAMMING PROCESS

The first step in implementing facilities for career education is to develop the program itself. There is no one model of a career education program that can adequately meet the needs of every school. It is up to each community to develop its own working conception of career education, based on the characteristics of its student population, available resources, shared preferences, and needs. These concepts and specific goals may require substantial reorganization of the schooling process, with direct implications for the physical environment. A well-organized planning process is the key to insuring that resulting physical arrangements will be supportive of chosen educational goals.

It is necessary to distinguish between the planning of an educational program and the planning of a facility. While both processes are interdependent, it is not the objective of this publication to provide guidelines for the planning of an entire career education curriculum. However, we would like to emphasize that it is important for those responsible to identify the desired program characteristics before they consider what facilities would be appropriate, to ensure that the program dictates the facility rather than the other way around. The design of the program (e.g., the selection of materials, planning of instructional activities, and establishment of the desired relationship between faculty and students is called programming; it is a process that may involve a dialogue between educators, students, and parents. This chapter discusses architectural programming, which provides the link between program planning (the curricular details) and facility planning (the physical design).

Programming may bring together the disparate client groups of the school (educational staff, parents, students, community leaders, design consultants) to determine the major goals and organizational requirements (not the curriculum) to guide the program personnel and architect in the creation of physical space that will serve and enrich the objectives of career education.

While design is primarily a problem-solving process, programming specialists William Pena and John Focke (1) note that program development is a problem-finding process. Participants in the programming process begin with a range of concerns and ideas that often are vague and lack clear definition. Through a structural process of analysis and dialogue, they are able to sharpen these concerns into a coherent problem statement, and the problem then can be resolved through physical design. This implies that the problem must be defined in terms of functional requirements of the career education program rather than of architectural solutions.

Architect Peter D. Pane, (2) who has had extensive experience in programming specialized science facilities, puts particular emphasis on this point. He notes that "educational specifications," which are detailed descriptions of building components, are often generated before "educational requirements"; this puts the emphasis on physical detail rather than on the desired educational performances of a facility.

To make maximum use of the abilities of all participants in the programming phase, educators and community representatives should focus on educational needs, and the designer than can generate the physical solutions. Otherwise, educational needs might be preempted by too much early attention to physical detail. That means opening up the programming activity to participation by members of the various constituencies that the program will serve (or who have a special interest in its development).

"Client" groups who could make a significant contribution to programming include: school staff members, parents of the students, community leaders and other community members, architect/facility consultants, representatives from all schools, students, and community planning councils. Each of these groups is discussed in the following paragraphs.

School Staff

Not only does programming allow the participants to gain an intensive "in-service" experience in institutional self-analysis and the clarification of instructional goals, it also exposes the staff (in a cooperative fashion) to the aspirations and needs of normally "invisible" segments of the community. Not only principals and teachers and other professional staff members, but also custodians and other nonprofessional staff members should be involved, for the insights they might have into facility functioning.

Parents

Parents care about both the quality and usefulness of their child's educational experiences and are often helpful in the programming process. Their involvement not only allows them to have their concerns and interests heard, but also initiates their direct involvement in the career education program--as potential resources (volunteer or otherwise) and as interested parties.

Community Leaders

Influential and concerned members of the community such as executives of local service organizations, managers of local industries and businesses, and local government officials can contribute much to the planning process. Once again, their commitment to the program can open up opportunities for learning experiences for students outside the school, as well as benefiting the leaders for their involvement.

Other Interested Community Members

The programming process and the resulting career education program can also benefit from the participation of a wide range of community members--workers in local businesses, retired persons, persons with a variety of skills and experiences. These are the "hidden resources" of the community--individuals with talents that could greatly enrich a career education program's offerings, whose backgrounds in "the world of work" might lead them to suggest quite different educational requirements than might be determined by an all-professional group. These individuals should be sought out and personally encouraged to join the planning.

Architect/Facility Consultant

Even if a community does not plan a new facility, it may be advisable to include an architect or consultant with experience in programming, not only for the technical advice and help in managing the process, but for the programming phase. His input into the finished document will make it that much more effective, no matter what the outcome.

Representatives from all schools

The ultimate "clients" of any educational program or facility are the students; yet often they are unseen and unheard in the programming process. Robert Propst's eloquent book High School: The Process and the Place (3) takes a hard look at the school as a living/working place from the eye level of students and suggests how the school could listen to them better and be restructured into a supportive "learning environment." Students' participation is particularly essential in the planning of career education. Their suggestions of desired learning options, for example, as well as their support of the concept, could have a substantial impact on the curriculum.

The Community Planning Council

Incorporating a varied client constituency into the programming process is by no means a simple task. Recruitment of community leaders and others from outside the school can be a challenging job, and a continuing, personalized-approach effort may be necessary to sustain their involvement. A clearly defined structure must be established to facilitate communication and ongoing involvement of the participants. One such mechanism is the formation of a Community Planning Council. (4) Allison Jackson suggests four requisite characteristics of such a council. (5) The members should be:

"1. committed to making decisions by consensus;
2. guided by learner need first and sincere enough in their convictions to reflect this priority in their decisions;
3. capable of communicating uniform views of planning decisions; and
4. willing to reorganize and work toward the specific purposes of the Council as outlined by yearly objectives."

The Charrette

While the Community Planning Council may provide the mechanism for involvement of a diverse clientele in planning for career education over a period of time, its membership is, by necessity, limited in number. To provide for wider participation for the limited time period in which architectural programming takes place, the Charrette is a possible option.

"Charrette" is a term used often in architecture to refer to an intensive, round-the-clock effort for a short time period (generally, to complete a project before a close deadline). In programming, the Charrete brings diverse individuals together with a similar sense of urgency, but for the purpose of problem finding. The information atmosphere is intense: information may be displayed graphically on the walls, as the participants are immersed in the programming process.

As William Chase (6) notes, the public forum of the Charrette serves to produce community recommendations "that carry insurance against rejection by any part of the power structure through direct participation of key officials who must approve public projects, and the constant monitoring of concepts and proposals in open community forum." The Charrette serves to bridge the distance between the client constituencies and to foster a consensus. The experiences of a number of communities with the Charrette, along with other mechanisms for involving the user public in school programming, are documented by James Holt. (7) As Chase notes, a Planning Council-type group can be used to set the stage for the Charrette and maintain the momentum generated by it over time.

The Programming Process

The context for facility programming is the long-range planning of a school district, and an assessment of these plans precedes actual programming. Robert Brooks, (8) an experienced school specialist, notes that this planning includes attention to district demographics and future enrollment trends as well as an evaluation of the condition of existing structures. The phased allocation of revenues for facility improvement and construction is also part of the long-range planning process. While this kind of planning is generally the responsibility of the district school board, facility programming is obviously dependent upon it. Conversely, programming can sometimes affect long-range plans as well. (This could be one significant outcome of a Charrette process--a reordering of long-range priorities based on expressed community needs.)

There are discrete steps in any programming process. We present below two models of the Programming/Planning process, for comparison. One (the Generic Planning Model) was developed by the Bureau of Planning of the New Jersey Department of Education. (9) The other (the CRS model) (10) was developed by the architecture/planning firm of Caudill, Rowlett and Scott, a leader in the development of architectural programming.

The two models provide an interesting contrast, since the generic model was designed specifically for educational planning and the CRS for architectural programming of any organizational facility. The generic model enumerates some steps that the CRS model assumes (e.g., Commitment to Planning and Goal Development). The steps in both models may overlap in process, but they represent the discreet stages of refinement leading to a final program. There are implied feedback and evaluation loops at each step for both models. The contrast should prove useful to administrators and others in planning their own programming process; readers may want to use these two models to develop their own planning model.

The Generic Planning Model (11)

As outlined by Jackson, of the New Jersey Department of Education, the planning team follows this series of steps in a regular planning cycle:

1. Goal Development: Establishment of a district-wide philosophy and a set of long-term objectives for curriculum and facilities. This step may be a lengthy process.

2. Needs Assessment: Collection of data on the current educational program: the number of staff and students, the characteristics of the community, current and expected student achievement, and an analysis of status and needs.

3. Problem Analysis: Definition and Analysis of needs data and problems; priorities assigned; objective analysis of costs and constraints in objective fashion (e.g., use of PERT techniques).

4. Generation of Alternatives: Examination of organizational/instructional options available to meet expressed needs.

5. Selection of Policies/Program: Evaluation of which methods are best for community, which meet goals effectively.

6. Implementation: Implementation of program with willingness to adjust plans, improve with feedback.

7. Evaluation: Evaluation of the program regarding goals and planning process itself; comparison of investment to results.

As Jackson points out, this model focuses on techniques that "bridge the gap between program reality and new facility potential." It provides a means of organizing and setting priorities in the planning process.

The CRS Model (12)

This model is taken from the Pena & Focke documents, with the permission of the authors.

> Separating problem seeking from problem solving is essential to avoid confusion as a project moves from conception to completion. The research for a definition of the problem calls for a step-by-step analytical procedure.
>
> CRS uses five such steps in problem seeking, as follows:
>
> 1. Establish Goals
> 2. Collect, Organize and Analyze Facts
> 3. Uncover and Test Progammatic Concepts
> 4. Determine the Real Needs
> 5. State the Problem
>
> Sequence of the steps may vary, but the steps themselves form an orderly framework for classifying and documenting information that comes from many sources.
>
> In practice, the first three steps may be concurrent. They can cause a re-evaluation of the client's goals and a "recycling" to confirm earlier facts and concepts. Step 4 is taken after evaluating the first three to determine space requirements, performance criteria, and project budget. An imbalance here would cause

another recycle analysis by the client-architect team to review and adjust the first four steps. The fifth step is taken after re-evaluating the previous steps; it shapes a statement in such a way as to spell out the total problem uniqueness and basic essence.

The Four Basic Considerations

If design of the facility is to solve problems of function, form, economy and time, then programming must treat these as basic considerations by which to classify information.

The first of these, function, deals with the functional implications of the client's activities, functional relationships, and numbers and types of people. It deals with social and functional organization. Contributions to the client could be by management consultants, behavioral scientists, and architects with intuitive insight into social values.

Form, the second consideration, is used by CRS to evoke questions regarding the physical and psychological environment to be provided, the quality of construction and the conditions of the site. The physical environment involves physical needs such as illumination, heating, ventilating, air-conditioning and acoustics. The psychological environment raises values which might affect user behavior; the architect must inject these intuitively until such time as analytical means are developed.

The third consideration, economy, emphasizes the need for early cost control and brings up for consideration by the programming team the initial budget, the operating cost and the long term cost which may be affected by initial quality of construction.

Consideration four, time, brings out the factors of change and growth, which affect function, form and economy.

Combining Steps and Considerations

At CRS, form, function, economy and time are the basic considerations--the content of the programming process. Later, they will serve as criteria for evaluating the completed programming package as well as the design solution. But these considerations are not in themselves a process: one is not considered ahead of the others. All four are considered simultaneously at each of the five steps in the analytical procedure. CRS uses them as key words in seeking information, and as general categories or classifications for organizing information at every step of the programming procedure.

In summary, then, form, function, economy and time, within the framework of the process, provide:

1. A format for collecting programming information.
2. Classifications for organizing such information.
3. Criteria for evaluating the results of programming and design.

Step 1 Establish Goals

The client usually finds it easier to express his goals for the project at the very beginning while he has the total project in mind and before his thinking becomes involved with details. When goals are established at this stage, they will provide a direction for programming. The gathering of facts can thus be related to the goals, and the tests for programmatic concepts will determine whether the goals are being followed or not.

A client will often place special emphasis on one or more considerations (function, form, economy, time) through his statements of goals. CRS encourages clients to state their goals in terms of all four considerations. For example, if the client tends to think only of functional goals the programmer should be ready to explore his goals for form, economy and time.

The client-owner may establish general overall goals. The client-user usually establishes more specific goals. Any conflict between them must be clarified and reconciled. The subsequent steps depend notably on clear-cut, coordinated goals. A more refined approach to the establishment of proper goals involves the ranking of values. This counts most in cases where the client-user may have a different set or hierachy of values than the client-owner. Behavioral scientists are beginning to provide this additional perspective as well as more effective information gathering techniques; these should lead to more precise and comprehensive programming.

Goals may lead the client directly to decisions on management policies. These policies, treated as a part of goals, provide readily useful information for CRS programmers.

Form: Goals concerned with form may be expressed in terms of site utilization and the fate of existing trees and structures. They may refer to the general character or effectiveness of the physical and psychological environment of the project location. A goal stated in terms of quality is always useful since it influences the decision making process and must ultimately be tested in reaching an equilibrium between quality, space and cost.

Function: Functional goals are expressed in terms of how the facility will affect the activities or processes to be housed. They may deal with personal and social implications. It is always useful at this stage to state goals by asking such questions as--Why is the new facility needed? What is the purpose in building? What is to be accomplished?

Economy: Most clients have a limit to their available funds. An economy goal establishes this limit. Even in cases where the client wants the architect to estimate the total cost, the client still has a limit in mind. Without exposure at the goals step, the limit cannot be evaluated and subsequent "recycling" of steps may result in drastic changes.

Time: Time goals may be stated in terms of anticipated change and growth as well as of expected occupancy. Time goals should be expected to show whether or not the project schedule is realistic.

Step 2 Collect, Organize and Analyze Facts

Facts by themselves will tell us nothing. They have to be organized and analyzed before they will reveal their importance. The classification of facts under form, function, economy and time is a useful way of organizing and analyzing the information.

Goals determine what kinds of information will be meaningful. Yet, the programmer still has to discriminate between immediately useful facts and details which will be useful at a later phase. The details must not be allowed to distort or confuse important data in the immediate programming phase. That is why CRS uses two-phase programming...

Checklists are often developed for the collection and documentation of information for each building or planning project type. These checklists cover the following categories:

Form: Data is needed on the site--its physical characteristics, climate conditions, legal aspects, coincident planning by other agencies; the availability of materials and the make-up of the local construction industry; information on building codes as they might affect the form of the building.

Function: Statistical data is needed on the numbers of people to be housed and their activities. Included should be space generating parameters--area per person, per activity--group sizes, kinds of groups and utilization requirements.

Economy: Data is required on budget limitations, local cost indices, building cost per square foot, operating costs and long-term costs where applicable, method of financing, the economic influence of other agencies.

Time: The programmer needs to know the project schedule, phasing and growth, price escalation, anticipated changes and projections.

Step 3 Uncover and Test Concepts

While Step 2 in general deals with facts and Step 3 with concepts, it is difficult to separate the two. The grouping of facts stems from ideas, while ideas or concepts of functional organization stem from facts. For purposes of analysis, facts concern quantitative information; concepts qualitative information.

Discovering concepts is probably one of the most elusive and difficult phases of programming. This is partly due to the nature of concepts: they demand that architect and client think abstractly. But concepts are also elusive and difficult to handle simply because architects and clients frequently do not agree on a common definition of concept.

"Programmatic concepts" is a term used to describe methods of implementing the goals (Step 1). Most concepts are organizational when they implement the client's functional goals. This heavy emphasis on function is a direct result of the client's participation on the team. It is here that the client can display his most creative thinking.

The architect must stimulate the client to make decisions in terms of his functional relationships, as well as his organizational structure. The testing of concepts provides a means of stimulating the client's decision-making.

The programming architect must be creative in the sense of finding combinations and alternatives to cause the client to participate and react with the required decision. The programmer must provide the analyses to bring out concepts and to stimulate the decision. But it is the client who makes the decision.

Programmatic and Design Concepts

It is not always easy to understand the difference between programmatic concepts and design concepts. Most often, concepts are thought of only as a form of design solution. This misconception is reinforced by the fact that design concepts respond at the design stage to programmatic concepts raised during programming, and therefore become so closely related that it is difficult to know which came first.

Programmatic concepts are abstract, and are expressed in terms of organizational structure, relationships and other functional requirements.

"Evocative" Words

Concepts are brought out and tested through the use of what CRS calls "evocative words." These words trigger useful information; they may be found in the subcategories... of the basic considerations (form, function, economy and time) or they may be identified with recurring concepts... Examples of evocative words are "site," "quality," "people," "priority."

The architect-programmer must be alert to concepts and record them as they emerge in discussions with the client, be they expressed however briefly.

How Concepts are Classified

Concepts are classified under form, function, economy, and time simply as a way of analyzing their implications. This is often a matter for interpretation--a particular concept could easily be listed under two or more classifications.

The following classification is based on CRS experience in testing these recurring concepts:

Form: While concepts dealing with function, economy and time can be stated abstractly, it is more difficult to do so with form concepts, but the client should be encouraged to do so, in terms of the site, the physical and psychological environment, and quality.

When the client cannot express a form concept except in physical terms, it is a premature design solution. In this case the programmer must look behind this solution. In this case the programmer must look behind this solution to bring out the reasons that led up to it.

Firm but preconceived opinions by the client can yield useful information and should be deliberately exposed during programming. These can be discussed and analyzed, and can lead to a better understanding of the requirements. Ignoring this can lead to difficulties later in the project.

Function: The programmer can raise and test a number of recurring concepts with the client as a way to give him an avenue for expressing his functional needs.

"Recurring" Concepts

A recurring concept is one which the architect has learned does not only appear at just one project or one type of institution, but appears as a potential aspect of any project or institution. Concepts like people, flow, flexibility, priority of needs, centralization, integration, belong to this class. A few of these recurring concepts are described here in more detail:

"Centralization vs. Decentralization": This concept deals with centralization or decentralization of activities, services or personnel. It can influence the program in terms of organizational structures, functional relationships and overall space affinities. The programmatic concept should not be confused with the design concept of compactness vs. dispersion: the programmatic concept can have several alternatives of compactness or dispersion.

"Integration vs. Compartmentalization": The programmer must find out from the client if activities should be integrated or compartmented. A group of closely related functions would indicate integration; the need for some degree or kinds of privacy (acoustical or visual), would imply compartmentalization. Here too, there is a difference between the programmatic concept of integration and the design concept of the open plan.

"Flow": This concept concerns the flow of people, vehicles, goods, services and information in terms of priority, sequence and degree of mix or separation. This concept expands on affinities and relationships but excludes a table of organization. Connections between corresponding units can be coded numerically, and abstract flow diagrams can be drawn up and manipulated to minimize conflicts in circulation. This can be a computer or manual function.

"Priority": An important evocative word is "priority". Priority has to do with people, spaces, things. It has to do with priority of functions and needs, such as relative position, size, social value and others.

"People" is another evocative word which can generate concepts derived from the physical, social and psychological characteristics of people--as individuals, in small groups, and in large groups. In this area there is no substitution for expertise, and the behavioral scientist has a major contribution to make.

Economy: Concepts under this heading are particularly useful in the recycle and analysis if there has been a lack of balance between budget, space requirements and quality.

"Versatility" is the first concept to be tested as a means of achieving such a balance; it could, however, result in reduced efficiency for each of the several functions to be combined.

Other evocative words which can generate economy concepts are: phasing, optimization, efficiency and cost/effectiveness.

Time: The following concepts can occur:
"Convertibility" is a concept that allows for anticipated change in functional requirements. The team must establish the degree of convertibility as: (1) immediate, (2) weekend or (3) long range.

"Expansibility": anticipated growth triggers the programmatic concept of "expansibility".

"Phasing" is a time-economy concept useful in efforts to attain functional and/or economic feasibility of the project.

The recurring concepts stem from experiences CRS has accumulated with many building types.

Step 4 Determine Needs

Determination of needs is fourth of the five analytical steps and seeks to establish quantitative needs of the client in terms of space requirements, a budget (as predicted for the time of construction) and quality (cost per square foot).

The proposed space requirements and the expected level of quality must be tested against the proposed budget at this stage of programming.

If a balance cannot be achieved between space, quality, budget and time, at least one of these four elements must be negotiable. Thus, if agreement is reached on quality, budget and time, the adjustment must be made in the amount of space. A serious imbalance might require cycling to re-evaluate goals, facts and concepts.

Form: The proposed quality of construction is expressed in quantitative terms as costs per square foot. At this stage this figure is based on experience and/or background survey and analysis. Both the physical and psychological environment are factors in quality of construction and, in turn, in the cost per square foot. Furthermore, site conditions will affect the form of the building and influence the construction budget.

Function: The client's functional needs (as determined by facts and concepts) have a direct bearing on space requirements, which are generated by people and activities. Allowance must be made for a reasonable building efficiency as expressed by the relationship of net to gross areas.

Economy: The cost estimate analysis must be as comprehensive and realistic as possible, with no doubt as to what comprises the total budget required. The building cost at this stage is usually based on a cost per square foot. Other cost items such as site development, fixed and movable equipment are based on percentages of building cost unless more refined figures are available. Most often these cost parameters are based on published indices and on experience tempered by the local situation.

Time: In determining the cost per square foot, a realistic escalation factor must be included to cover the time lag between programming and mid-construction.

Phasing of construction may be considered as an alternative:

a. When the initial budget is limited.
b. When the funds are available over a period of time.
c. When the functional needs are expected to grow.

Step 5 State the Problem

Once the first four steps in programming have been completed and evaluated, the programmer and the designer begin together to formulate a series of very succinct statements. These constitute the Statement of the Problem.

The Statement of the Problem is the link between problem definition and problem solving, between programming and design. The problem must be stated in qualitative terms in a way that will bring out the essence and uniqueness of the project at hand. There should be no less than four such statements--dealing with form, function, economy and time. The statements should not exceed ten, except for very complex projects. Too many statements may be a sign that details are being used as premises for design, which runs counter to CRS programming practice.

Meanwhile, supporting data contains all the information gathered on goals, facts, concepts and needs. All this is recorded (or documented). It is available--in qualitative and quantitative terms.

The statements must deal with the unique, not the universal aspects of the problem. Further, they should be made in terms of performance, so as not to close the door to different expressions in architectural form. In some cases the statement of the problem may even be developed to the point of a simplified performance specification,

> that points up the functional requirements to be met by the solution.
>
> Any of the preceeding four steps--goals, facts, concepts, needs--can be a source of such a programming statement, so long as it is an important physical form giver.
>
> An effective method for developing each statement is first to state an important condition and then to suggest a direction by means of the statement.
>
> Form: Form connected statements may describe the particular environmental influences and site conditions and then establish a performance requirement to respond to these...
>
> Function: The first four steps may have uncovered unique performance requirements that will influence the functional aspects of the solution...
>
> Economy: To give direction to the designer who may have different projects underway, with different budgets, a program statement must establish an attitude toward the budget of the project at hand...
>
> Time: Statements must be made concerning the implications of change and growth on long range performance...
>
> The object of programming is problem definition. The problem needs to be defined in terms of the major issues that affect the total problem. The Statement of Problem is really a short series of categorized statements which the designer will later use to evaluate the solution.

This chapter has discussed some issues that should be considered in planning process and given some ideas about how planning can be init The next chapter deals with specific issues related to the process o facilities development.

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III. IMPLEMENTATION OF FACILITIES

INTRODUCTION

Following the planning of the career education program goals, objectives, and proposed activities, selection and implementation of the facility to support the program can begin. This chapter describes the sequence of steps in the process of planning the facility, gives examples of several different types of facilities that might be appropriate for different applications, and discusses various factors that should be considered by an administrator in selecting and implementing the types of facilities best meeting the needs of his career education program.

Facilities that can support career education programs are not necessarily different from traditional educational facilities. Indeed, successful career education programs are frequently conducted in standard classrooms, with little or no modification to the existing space. The major difference between the standard educational practice and the implementation of facilities for career education programs is in the nature of the activities or program that the facilities support. There is no special mystique surrounding the establishment of career education facilities; there is, however, a wide range of types of facilities within which career education can take place, and considerable care must be taken to choose the type most appropriate for a given application.

While the chapter gives examples of effective use of a variety of facilities in career education, it tends to emphasize the use of traditional classroom space for programs in the early phase of awareness. The classroom is convenient; furthermore, it can be effective for career education when teachers and administrators learn to use the classroom space in new ways, and when they become familiar and comfortable with the demands and opportunities implicit in career education activities. For example, career education implies arrangements that provide for individual review of multimedia presentations; it implies simulated experiences in early years, leading to hands-on experiences; and it often suggests new ways of teaching regular subjects to integrate career education into the regular curriculum.

For later activities in career exploration and preparation, classrooms can be supplemented with, or replaced by, other kinds of facilities. Some that have been used successfully include relocatable units, particularly, mobile units; "found space" in the community; and, of course, new buildings. The new buildings can, in some cases, serve as central career centers that are used by a number of different schools in a district.

The chapter discusses this array of facility types and considerations that should influence a school administrator's selection of a particular type. To make these general considerations meaningful and operational, specific examples are cited from the literature and from SDC's own observations of selected career education programs. In these examples, emphasis is placed on the factors, pro and con, that led school officials to choose one configuration over another.

Many of the programs described in this chapter were observed first-hand and are documented, through text and illustrations, in Chapter IV. The remainder were drawn from the literature.

RELOCATABLE UNITS

Definition

Relocatable facilities include portable units that can be picked up and moved on trucks; modular units that can be assembled in different ways depending on their intended uses; and mobile units, which are pulled by truck or tractor from one school to another.

Considerations for Selection

Relocatable units share a number of general characteristics that make them good candidates for career education facilities. The cost of relocatable units is far less than the cost of most new facilities, and they are sufficiently flexible to serve career education programs at any grade level. They can be custom-designed to serve a range of programs, including those that use heavy shop equipment or extensive audiovisual equipment.

The quick availability of relocatable facilities is an important feature: career education programs are being developed rapidly, to meet demands for programs. Two programs designed for use in Bingham County, Idaho,[1] were a career center and a simulated mortgage and loan office. Anxious to establish the program, the staff was able to obtain two mobile units fairly easily. A program in Rough Rock, Arizona, obtained a completely equipped science unit that included a curriculum design and staff training component.

Training in a variety of skills is important in the Preparation phase of career education programs, and mobile units can be used effectively for the teaching of welding, building trades, electricity skills, and so on, because many come equipped with all tools and instructions needed in skill-training programs. A recent article in American School and University (1) described a program in Arkansas that uses a mobile machine shop, complete with ten lathes and other equipment; an electronics shop; a building trades shop; and an air-conditioning and refrigeration shop. A program described in Industrial Education (2), in Wilkes County, South Carolina, teaches welding, carpentry, and electrical wiring, all in the same unit. Two relocatable units in the Bridgeport, Connecticut, career education program are equipped to teach food services, health services, electronics, and welding. The BOP (Bingham County Office Program) unit in Idaho is equipped with all of the desks and other accoutrements that one would find in a mortgage and loan company, to simulate all of the skills that are used in a corporation.

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[1] Programs that are mentioned in this section without a bibliographic citation were included in site visits and are documented in Chapter IV.

The awareness phase of career education can also be effectively supported by mobile units. For example, the PACE center (Programmed Activities for Career Exploration) in Idaho is equipped with booths containing audio-visual presentations; PACE travels among five rural high schools presenting material on a wide variety of careers.

The mobility of these units is considered quite important by some career education users. According to the previously cited article in Industrial Education, the New Jersey State Department of Education uses relocatable units to introduce programs on an experimental basis. In effect, these units provide a traveling show that presents a variety of career education programs throughout the district. Programs found particularly beneficial and cost-effective can subsequently be adapted to more permanent facilities.

Mobility is also important for districts that want to avoid transporting students to a common location. The Arkansas program circulates four skill-training units throughout several rural communities. The Rough Rock unit brings information about science careers to isolated areas of the reservation.

Another important asset of relocatable facilities is that, because they are not part of the standard classroom, they can provide a change of pace, a more realistic environment for career education. The BOP mortgage office is an example of a program where the staff felt that the unit would provide a different environment that would allow a more realistic experience than could be acquired in the standard classroom.

There is a definite cost advantage in the sharing of relocatable facilities among several schools. By avoiding the replication of programs and equipment at each school, they may permit considerable cost savings. Moreover, the units themselves are lower in cost than most new permanent construction might be; a mobile unit can be purchased for $8,000 or so (the cost of the PACE unit); more complete and highly customized units cost from $20,000 to $30,000. There are, of course, added costs for the vehicle that pulls the unit, and sometimes parking or storage costs.

Mobile units and other relocatables do have some definite disadvantages in some situations. An article on relocatable units (3) notes that there is time lost in travel, and weather conditions present some inconvenience; sometimes travel over rough roads causes damage to the equipment.(4) And storage spaces may be small. The mobile unit depreciates fairly quickly, as a program in Syracuse discovered; maintenance and travel costs were factors that caused the staff there to move a career center from a mobile unit into an empty classroom. There is, of course, limited space, and in some cases, the number of students who can occupy the unit at one time is usually between 11 and 15 less than the size of most classes. In addition, as the Syracuse staff discovered, it is sometimes difficult to transport the unit in a crowded city; there, special routes had to be worked out in advance of the movement of the unit. It has also been found that the mobile units are sometimes difficult to park on a school grounds because of lack of adequate space. Finally, the use of mobile units may be inappropriate in certain cases because they do not allow for physical expansion, unless the school adds more units.

Considerations for Implementation

Implementation of a program in a relocatable unit often involves work with various state or local regulations and codes. For the prebuilt units used in Bingham County, the state approved the plans before construction. The Bridgeport program found that their temporary unit would not meet the state codes until ramps were installed. Fire regulations often require that doors be kept unlocked during the day, or that a fire extinguisher be installed. (This is, of course, true for almost all types of facilities.) Equipment must be obtained;

and, depending on the amount and type, it may be necessary to add gas, electricity, or water. In Bridgeport, many different pieces of equipment were required, and it was important to comply with state and local building codes in installing these. Regulations should be checked with the Public Works Department; toilet facilities may need to be included, though some units come equipped with them. There may also be a need for an air conditioner or heating device to be installed, though some units come equipped with these as well.

Windows, far from being an expensive, nonessential luxury, will give students a good feeling of space in an otherwise close environment. When the staff of the BOP program set up the mobile unit, windows were considered unnecessary; they would now like to add a few, to avoid a closed-in feeling.

Safeguards against break-ins are also important; these may include outdoor lights above the doors, heavy-duty locks, and steel doors.

Some units come equipped with virtually all of the features listed above, while others do not. The individual who arranges for the lease or purchase of the unit should work closely with the manufacturer to determine what facilities should be installed in the unit before it is delivered, and should consult the local building inspector to find out about codes and regulations that must be met. In addition, approval from the local planning and zoning commission may be required.

Many different kinds of relocatable units are in use today in career education programs, and there is a useful lesson to be learned from the Bingham County programs. Before they undertook the selection and implementation of the facilities to support their programs, the staff visited a number of other programs, within the state and within the region, to talk with individuals about the success of their programs. Other programs would doubtless learn a great deal by visiting existing programs using these kinds of units before they implemented a program of their own.

COMMUNITY FACILITIES

Definition

Community facilities, or "found" space, includes any building or space in the community that can be used to support career education programs, on a part-time or full-time basis. This can include vacated buildings, unused office space, garages, churches, and a host of other facilities. Such facilities can be bought, leased, or rented on a short-term basis. Often, schools and businesses share space, a very economical and successful partnership, as reported in an article in the American Institute of Architects Journal.(1)

Considerations for Selection

The use of community space can have distinct advantages for career education programs that stress the importance of the school-to-work transition, and that seek to give students a practical familiarity with the real world outside the school. Because programs at the junior-high and senior-high levels are more community-oriented than elementary-school programs, community facilities are more often used at the higher grades. Yet, a program planned for Welfare Island in New York City, as described by the American Institute of Architects, is an example of programs that have students at elementary and secondary levels using space in the community for virtually all of their studies. (6)

The desire to integrate school and the real world was an important consideration in the Far West Laboratory-sponsored school's decision to operate high-school classes in a high-rise in Oakland.[1] There, they first decided that their program would be more effective if it were outside of the regular classroom environment, and they made plans to move into a mansion located on a lake; they then decided that this provided too "soft" an environment and that, rather than arbitrarily selecting another facility, they needed one that was in the business community itself to provide a realistic base for the program. This kind of facility use can help to answer the often-heard complaint that traditional classrooms are far too artificial an environment for learning about the world of work.

Another potential advantage of "found" space in the community is that it may already have a combination of space, storage, special equipment, etc., that might be extremely expensive and time-consuming to create in existing or newly-constructed school buildings. This advantage is particularly important because a career education program is often developed or designed before the facility is located. By considering the entire community as a potential source of appropriate facilities, the staff can see a wide range of options, and it may be possible to match the program needs much more closely than would be possible within the boundaries of the district itself. As an example, a career education media center in Glendale, Arizona, required large storage areas, special space for individual reading, and an extensive off-street parking area. These facilities were not readily available within the district, but were found in a downtown building that had formerly housed a drugstore. The building was not being used and when it was renovated, it became a very suitable facility.

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[1] Programs that are mentioned in this section without a bibliographic citation were included in site visits and are documented in Chapter IV.

Another example of community space meeting the requirements of a career education program is a program serving grades 4-8 in the Ocean Park area of Los Angeles. The program uses a storefront that was found to have all of the desired features: a sink area for lab work; an adequate storage area; ample space for art projects that could be left out when they were not being worked on; and a large, open room for group meetings. The total facility does not occupy a great deal of space, but it meets all of the program's needs, one of which is to have a central location from which children can be bused around the community to visit businesses, libraries, government agencies, and other sites and experience the careers that are involved.

Finally, bringing the school into the community facilitates school/community contacts and permits more efficient use of space, either through space sharing or through the use of once-vacant facilities. Bass (7) notes the growing trend toward joint occupancy, where schools share space with businesses, community offices, youth clubs, and other facilities. It is often cost-effective, eases property tax burdens, and allows the sharing of programs between schools and businesses, churches, gyms and other facilities. It also makes maximum use of the facility: one that was used only a few hours a day might now be used full time. Education Facilities Labs (8) also make the point that bringing school into the community can give new vitality to an old neighborhood. It makes possible a greater variety of activities than might be accommodated in a school building, since the community is rich with different experiences.

Sharing an existing facility is seen as an option that is usually much more economical than the construction of a new facility, and can be done much more quickly. A district that is anxious to implement a program might find a very appropriate space that could be modified for use fairly quickly and at far less cost than that of a new building. The MOBOC program, in Ocean Park, California, described in Chapter IV, is a good example.

Using community space does have some difficulties. If an old building is chosen, there may be the need to make substantial repairs, and there may be extensive maintenance. Because the community space will not have been designed for school use, substantial modifications may be needed, such as rewiring the complete facility or changing the plumbing. The effort to make the necessary modifications may be greater than the advantages gained. The developers of the programs described in this chapter chose carefully to avoid these pitfalls; they selected facilities that required a minimum of modification.

A potential disadvantage of facilities-sharing is that, when a given space is used at different times by different groups, each user must clear up materials in readiness for the next user. The Ocean Park program first shared a facility used by after-school clubs, but found it inconvenient and established their own facility instead. And when schools share facilities with others, there are legal issues that must be worked out, such as cost-sharing, rights, maintenance, and so on. These are not insurmountable problems, however. As Clinchy notes, the growing trend toward the use of found community space in education suggests that career education directors should consider this option seriously, in planning the facilities that will best support their programs.

Considerations for Implementation

In the selection of found space in the community, it is important to determine whether the facility meets applicable building codes, such as health, fire, and safety codes. Local officials should be consulted during the site selection and planning process. For example, the Ocean Park program found it useful to consult fire officials for advice on how to make the facility safe. There are often regulations pertaining to toilet facilities, exits, electricity, fire alarms, and so forth. Potential zoning restrictions is another area that should be checked out in the planning stages. There are also other issues, summarized by the Educational Facilities Lab: Is the facility esthetically pleasing? What needs to be done to it to make it a pleasant environment? Is public transportation adequate and nearby? Is there parking for school buses, cars and/or bicycles? Are loading docks, hallways, elevators, doorways, adequate?

Another important consideration is the extent to which the program or the student population is likely to expand or change. If the program is likely to be changed, or to accommodate more students, some facilities should be made flexible enough to meet these future needs. The staff's long-range prediction about expansion should be a consideration in the decision on whether to buy or rent, whether the facility will support an expanded or modified program, what modifications are required now, and what ones are likely in the future if the program or student population changes. If the need for the program changes altogether and a different type of facility is required, can the program be moved easily to another location?

If modifications are required, the landlord should be asked to put in writing what changes he agrees to make, and what changes he will permit the school to make. The school usually installs any built-in equipment or furniture, since in most cases "built-ins" belong to the landlord. An architect, building inspector, or other qualified person should examine the facility to determine whether it is structurally sound, in good physical condition, and able to support program activities, as well as to suggest ways to make modifications that are found to be required.

It should be kept in mind that costs of renting or leasing found space in the community may be quite low, as compared with other facility options. The MOBOC program makes extensive use of community facilities without modification, considering the community to be a learning facility in itself. Other programs might find the need to make fairly substantial modifications to found space, but the cost of the renovation of the drug store in Glendale, Arizona, is likely to be lower than costs of a new building and the purchase of a fully equipped mobile unit. Low cost is definitely an important factor to consider in the decision to use existing facilities in the community.

NEW FACILITIES

Definition

New facilities that have been designed and constructed specifically to accommodate career education programs vary in size from the very small centers that have been designed and constructed solely by teachers, parents, and students, to the multimillion dollar complexes designed by architects and constructed by contractors. Some of these new facilities are intended to house a special activity such as growing plants; other facilities, defined as career centers, are used to keep career-related materials; and still others are designed to accommodate as many of the career clusters as interest and funds can support. Although the procedures used for developing each of these types of facilities vary greatly, a few considerations in selecting and implementing a new facility are common to all.

Considerations for Selection

Because of time and expense, a district will rarely feel the need and ability to construct an entire new facility to support its career education program. The construction of a new facility usually is prompted by one or more of the following conditions:

(1) There is no free space available within the total school plant to accommodate the proposed career activity. Storage of materials may be a major problem. Career education activities often use an abundance of equipment or materials; because of the expense of purchasing equipment and materials, many of these resources must be shared among all classrooms and students within a school. This implies the necessity of establishing a centrally located storage and check-out area, or a specific area where students can go to use the materials and equipment.

(2) Special environmental controls not found in traditional school settings are needed. An obvious example is the humid, warm environment needed in a greenhouse. The Harbor Heights project in Gig Harbor, Washington,[1] wanted a program where students could grow and sell plants, and found that the school did not have an adequate facility. They felt that, even if a classroom could be used to simulate a greenhouse, many aspects and real experiences of the occupations involved would never be experienced by the students.

(3) Code restrictions that would govern certain planned activities make it necessary to design special facilities. Activities such as automotive engine repair, fiberglass molding, spray painting, and welding, require that the structure that houses them be constructed of materials that have a fire resistance rating that is much higher than is needed for standard classrooms. For example, the facility that supports a fiberglass molding program in the Highline Occupational Skills Center was made of concrete to provide safety. Building codes may require that these special activities be located in separate facilities and at a specified distance away from other buildings. To locate the activity in the same building as the classroom would require that the entire school comply with the more stringent restrictions, and this can be very expensive.

(4) Existing school facilities are found to be difficult and expensive to modify, or not conducive to simulating career-related activities. For example, the costs of renovating a facility to simulate a greenhouse may be greater than costs of purchasing one. Some structural systems, such as those with internal load-bearing partitions, are not

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[1] Programs that are mentioned in this section without a bibliographic citation were included in site visits and are documented in Chapter IV.

easily modified. Occasionally, existing plumbing such as bathrooms or work sinks interferes with needed space modifications. In some situations where existing school facilities are located in areas of declining populations, it may be desirable to create a new facility in a more central or more populated area. The Highline Occupational Skills Center resulted from the cooperation of three districts that determined that a new, central facility would be economical in avoiding duplication of space and materials among three separate districts.

Even where existing school facilities can be modified, they may still "feel" like a classroom and may fail to provide an environment where the student is able to make meaningful decisions about the "fit" of the career being investigated. The regular classroom environment often detracts from the reality of a simulated occupation. The staff of the Skyline Center, in Dallas, felt that a totally separate environment was needed--again, one that could be used by many different schools. The district constructed special facilities that are called schools, but that more closely resemble working environments of the community. These facilities provide complete training resources and offer opportunities for students to become exposed to many different careers.

(5) There is a desire to upgrade and highlight skills training by developing a special facility to house it. In Billerica, Massachusetts (9), the district felt that vocational education had an unfavorable image, and designed a totally new, exemplary school to house career education programs.

Aside from the obvious disadvantages of cost and long lead time, the construction of new facilities for career education programs is often difficult to "sell" to a community and, therefore, difficult to finance. There is also the problem of having to acquire enough land to accommodate the facility, and at a location that is convenient for the school or schools that will use the facility. Another disadvantage is the need to predict future program expansion or expansion of the student population in such a way that the facility can be designed to accommodate such expansion or change. While there are circumstances in which the construction of a new building is the best (or only) solution, the process is time-consuming and costly, and other options should be given careful consideration.

Considerations for Implementation

In implementing a new career education facility, no matter what size, the district will need to consider the following issues, most of which are not unique to career education facilities but would apply to the development of any education facility.

(1) What needs the new facility should meet. Assuming that the program goals have already been set, the staff should now define the specifications that the facility design should meet. Some spatial needs are obvious, such as the need for storage and display of career-related materials. A five-story facility described in School Shop (10) used 60 separate committees, each determining the particular needs of a different skill area. Representatives of industry were closely involved. When the Lake Weston, Orlando, facility was developed, the staff identified the need for centralized storage of materials that had previously been located in different areas around the school. For the Skyline Center, the staff made an intensive survey of the community to identify the careers that should be included. In Billerica, Massachusetts (11), the superintendent-director developed course outlines and visited many high schools to create the educational specifications for an "exemplary design" to serve 1,400 students.

(2) Sources and amount of funding. Smaller projects may receive funding from maintenance budgets, special fund raising events, or donations from parents and friends of the school. These donations often come in the form of materials and labor. At Lake Weston, parents donated most of the materials that were used. Large-scale projects will need to promote their cause to the state department of education in the form of a proposal and often to the community in the form of a bond issue. For example, the Riverton center was built after a committee planned the center and the community passed a bond issue for $1,490,000.

(3) Preparing the necessary plans and specifications. State departments of education, along with the local building department, will want to review any proposed physical change to the total school plant. Small projects can usually be represented by simple drawings produced by a teacher or any other person who is capable of describing graphically the dimensions, location, and construction of the facility. A large-scale project will require sophisticated drawings produced by a registered architect, and the review process may be quite lengthy and stringent. The services of an architect were critical in the development of the Skyline, Riverton, and Highline Occupational Skills projects. In these projects, close cooperation between architect and school personnel was considered very important.

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(4) Selection of an architect. The district should publicize their intention to build or modify, draw up a list of potential candidates, prepare a detailed description of the proposed project and send the best candidates a questionnaire for additional information. Those architects who seem most qualified should make a personal presentation to the design and planning committee.

The following information will be useful for identifying the best candidates:

Nature of firm: corporation, partnership, individual;
Years experience;
Names of mechanical/electrical engineers on staff;
Membership in professional organizations;
Types of buildings in which the firm specializes.
Most recently completed projects, and their costs; and the
Best school projects recently completed, and their costs.
(The committee should visit the projects, if possible.)

(5) Selection of a site. Consultation with an architect and with community representatives is useful in site selection. The Riverton, Wyoming, Career Education Center was developed with an advisory committee of 65 community representatives who helped select the site. Often, a central location is needed, as examplified by the Skyline program in Dallas and the three-district center in the state of Washington.

(6) How the facility will be constructed. Small-scale projects might be constructed by the custodians, parents, or students; for example, a high school carpentry class did construction for the Lake Weston facility. Large-scale projects such as the Riverton and Dallas facilities need to be constructed by contractors. Existing programs can provide guidance on how facilities should be constructed.

EXISTING SCHOOL FACILITIES

Definition

Existing school facilities include all of the space normally found in a traditional school setting, such as classrooms, industrial arts, home economics, and science laboratories, gymnasiums, cafeterias, storerooms, and offices.

The term "existing facilities," as used here, includes facilities that can be modified to meet specific program needs. Indeed, extensive modifications may be required, especially when the programs involve activities that are unusually noisy, present potential safety hazards, or require specialized equipment. Even in cases where fairly traditional classroom activities are to be conducted, it may be necessary to modify space with room dividers, sound baffles, sinks, built-in counters, shelves, and closets, and to add movable furniture such as desks, tables, and chairs.

Considerations for Selection

Considerations in deciding whether to select existing facilities relate to the specific career education program goals, which differ at different grade levels.

One of the main goals of career education at the elementary level is to provide students with general career information, such as where people work, what they do, and the skills and abilities needed to perform that work. Hands-on activities at this level are not meant to develop skills in using tools or equipment but to provide a more complete awareness of the tasks related to various careers. Most activities at this level can be accommodated within a traditional classroom setting, either integrated into the total curriculum or as a separate activity occurring at special times.

The use of existing school facilities for career education programs at the high school level may require few changes to the physical facility. The emphasis is on the changing programs that are used in existing facilities. For example, by using an industrial arts lab for investigating all aspects of a given career, rather than focusing on one activity, career education programs at the senior high school level can provide students with experiences that are closely related to the actual working conditions of a given occupation. Although a major thrust of career education at this level is the attempt to get students out into the community for direct experience, many career-related functions can be effectively housed in existing high school facilities, for example, office practice, food preparation, or carpentry.

At all school levels, economy is one of the frequently cited reasons for the decision to use existing school facilities for career education programs, especially where space is available that requires little structural modification. Sixth-grade career education activities at an elementary school in Bowling Green, Kentucky,[1] are accommodated in a traditional classroom setting with no additional cost at all. There, a factory assembly line was simulated by a regrouping of the classroom furniture into a series of work stations. The career education center at Little River Elementary School in Miami, Florida, is contained in two adjacent classrooms. The center is composed of twenty different work stations where students spend about an hour a week exploring the careers represented at each station. They perform tasks that are outlined in a resource guide such as typing a letter, setting a table, or wiring a house. The only costs in preparing the center were for connecting the two rooms by taking out a portion of the common wall between them and for providing a fresh coat of paint; both were done by the project staff.

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[1] Programs that are mentioned in this section without a bibliographic citation were included in site visits and are documented in Chapter IV.

Industrial arts laboratories, home economic centers, and other specialized facilities in junior high schools can often be used as they exist to support career education programs, with changes made in the instruction to provide more career-related experience. For example, Bowling Green Jr. High School was able to guide students through a complete course in building construction without significant modifications in the facility. The program provided experience in many different careers, including architecture, carpentry, building contracting, and building inspection. A similar application in a home economics lab might provide experience in the careers of bakery, cooking, nutrition, sewing, and many others.

One way a typical high school classroom can be modified to accommodate career activities at a nominal cost is by changing the furnishings. For example, at the high school in Beckley, West Virginia, the staff established a Career Resource Center in an existing classroom by bringing in tables that were used to display materials and as work stations for using the materials. Many vocational educational facilities in high schools can easily accommodate career education programs. A space originally used only for drafting can be used to support the exploration of many different careers in the field of communication and media.

An additional cost advantage of existing school facilities is that they have already met building codes. However, new activities planned for a career education program may be governed by additional code requirements that might require major modifications. An important consideration in the use of existing facilities is whether it is more cost-effective to adapt available space in the schools or to acquire off-campus space already designed to handle the kinds of activities that are planned.

An example of a career education activity that might introduce new code requirements, and consequently necessitate significant modification or replacement of existing facilities, would be the training of students in fiberglass construction or in spray painting. Suppose, for instance, that the existing space is a wood-frame structure. Building codes require that fiberglass work and spray painting be contained in structures that are highly protected from fire. The codes specify this protection in terms of hours that the structure would be expected to withstand fire. Whereas a traditional classroom activity might require only a one-hour fire rating, for which a frame structure would be sufficient, fiberglass construction could require up to a four-hour rating and in most states, a concrete structure would be required.

It is possible, of course, to modify some facilities so that they can accommodate more hazardous activities. Methods of accomplishing this include adding a sprinkler system and applying layers of fireproof materials to all surfaces of the structure. However, these changes are usually expensive, and such approaches should be carefully studied, and trade-off analyses should be performed.

A second potential advantage of using existing classroom space (as contrasted with off-campus space) is that transportation needs of the students are minimized. This is particularly important at the early grade levels, where organizing and moving a class of children usually requires securing extra help for the teacher from an aide, parent, or other teacher.

The ready availability of existing classroom space is also an important consideration in selecting a career education facility. In some areas within certain school districts, the school enrollment has dropped, and classrooms are unused. For example, Syracuse found three empty classrooms to accommodate its program at Franklin Elementary School. Because of the high rate of population movement out of the city of Dayton, Ohio, into the surrounding suburbs, the boundaries of Dayton's schools have been modified, enabling them to close one whole elementary school to normal school functions. Two classrooms are used by Dayton for the preparation and storage of materials needed for the elementary school industrial arts component of the career education program.

The integration of career education within the existing curriculum is most important in the early grades of elementary school and is often a major consideration for using existing classroom facilities.

At Lake Weston Elementary School in Orlando, Florida, centers are developed in each classroom around a specific theme or occupation. These centers contain learning activity packages, books and pamphlets, film strips with audio cassettes, and actual equipment used in the career. A first-grade center was developed on the theme of what it is like to be a fireman. It contained a cardboard model of a firehouse, photographs of a class trip to the fire department, cards of fire-related words that the children had learned, and a fireman's hat.

Each child in that class helped to develop the center, and was free to use it at any time. Activities generated by the center were woven into the goals of the existing curriculum. For reading, the children read about the fire department, for composition they wrote stories about their visit to the fire department and as an art project they made a cardboard fire house and drew pictures of it.

There are disadvantages as well as advantages in using existing facilities for career education programs. One potential disadvantage is that the program can be distracting to neighboring classrooms. Another is the belief by some educators that the classroom is too artificial an environment for a stimulating program, and that real-world experience makes for a more effective program. Having programs in each school in a district often involves replication of programs and equipment that might be more efficiently shared in a central location. If existing space is available at only one school in a district, such as the Franklin School program in Syracuse, it is necessary to transport students to the facility; the Syracuse district did not see this as a problem, but another district might. Then too, career education activities often require more flexibility than can be found in a classroom. Many of the programs being taught in the Skyline center, for example, could never be accommodated in a traditional classroom, and the greenhouse used in Gig Harbor, Washington, would be very difficult to replicate in a classroom.

Considerations for Implementation

In implementing a program in an existing facility, it is essential to consider the full range of activities that will be required by the program, and the impact of those activities on the needs for facility resources. Some programs require little or no change to the existing classroom or workshop. Others may require substantial modification. For example, if independent student work is intended, it might be necessary to provide audio and/or visual separation of the students. In the Work Samples Lab, students needed to work individually, and booths were developed to provide separation. If larger-group activities are planned, it might be necessary to expand the space in which the program is to take place; this was accomplished fairly easily in Little River Elementary School in Miami, where the staff cut a space in a common adjoining wall that separated two classrooms, expanding it to one large room that could be supervised by one teacher. In the Occupational Versatility program in Seattle, the program called for opening up space so that all of the activities are in one large area; the partitions that existed between each shop room were removed to create the large space. The program in Orlando, Florida, required the construction of a large model; existing classroom space was used by moving desks against the wall and clearing a central area for work.

Space for storage should also be taken into account. The Orlando program had stored materials in many different places in the school; school officials found that existing space was insufficient and that a new storage area was required. Any program that will have a great deal of material should plan in advance for the storage of the material.

Programs that involve the use of equipment must consider such requirements as the installation of additional electrical outlets, gas, and other utilities. In the Work Samples Lab, each student was supplied with audio-visual equipment for viewing and listening to presentations on career education; they also used hand-tools such as drills in the hands-on activity; this required the addition of a large number of electrical outlets. Noise is another factor that should be considered. When a program operates in the same general area of the academic classrooms, it may be disruptive or disturbing to others.

Finally, it is important to consider building and safety codes. Although existing classrooms already meet the normal codes, the addition of some types of equipment or activities may require adherence to stricter codes. For example, if an activity is added that potentially creates a fire hazard or a safety hazard, local fire or safety officials should be contacted for information on any additional codes that may apply. The following section discusses the use of building codes.

USE OF BUILDING CODES

The building code is a law or ordinance passed by the local government that establishes minimum requirements for securing structural, sanitary, and fire safety. It specifies the performance requirements for various elements of buildings and structures in relation to the hazards faced or conditions that should be met.

The National Building Code (Board of Fire Underwriters) and the Basic Building Code (Building Officials' Conference of America) are examples of well-established regional and national codes. These codes contain minimum requirements and provide for acceptance of materials and methods based on satisfactory performance standards and recognized industry standards. As new construction methods and materials are tested and approved, the codes are updated.

Codes need to be examined when a new building is being planned, when an old building is being modified, and when the type of activity or occupancy of a building changes.

The following procedures may be helpful in the use of building codes when planning one of the types of career educational facilities discussed above.

1. Classifying the building

(a) Fire zone: The fire zone in which the building is located can be determined from the city's Fire District Zoning Map. Fire zones commonly range from a designation for high-density areas, such as central business districts (this zone is usually most restrictive in respect to what activities are allowed) to a classification for low-density areas such as the suburbs or rural areas (this category can accommodate most activities).

(b) Occupancy group: The occupancy group that covers the most likely uses of the building will determine the type of construction, allowable floor area, and so on; where the building can be located on the property; the number and type of exits that are required; the amount of lighting, ventilation, and sanitation required; when fire-extinguisher systems are required; and protection needed for special hazards.

(c) Types of construction: The type of construction of the building is determined by the building materials used and the building's fire resistance. This area of the code is concerned with the type of structural frame and roof coverings; what unprotected materials are allowed, such as wood paneling and fire-retardant treated wood; weather protection; and guard rails.

(d) Location on property: The location of the building on the site and the clearances to property lines and other buildings are determined from the plot plan.

(e) Floor area: There are basic allowable floor areas based on occupancy group and type of construction. These allowable areas can be increased depending on the location on the property and the installation of an approved automatic fire-extinguishing system.

(f) Height and number of stories: The height of the building is computed from grade level. There is a maximum allowable height and number of stories, depending on the occupancy group and the type of construction. These maximums can be increased if an approved automatic fire-extinguishing system is installed.

(g) Occupant load: Each occupancy requires a certain square footage of floor space per occupant; e.g. 20 square feet per person in a typical classroom, or 50 square feet per person in a school shop.

2. Verification of compliance of the building with all occupancy requirements.

3. Verification of compliance of the building with detailed type-of-construction requirements.

4. Verification of compliance of the building with exit requirements.

5. Verification of compliance of the building with detailed code regulations.

6. Verification of compliance of the building with engineering regulations and requirements for materials of construction.

Notes

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2. Smith, Howard. Mobile units: boon or bust in industrial education? *Industrial Education*, April, 1973.

3. Baas, Alan. Relocatable classrooms. *Educational Facilities Review Series*. ERIC Clearinghouse on Educational Management, Eugene, Oregon. January, 1973 (10).

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5. Clinchy, Evans. Where people move, schools must follow. *American Institute of Architects Journal*, October, 1973.

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7. Bass, Alan M. Joint occupancy. *Educational Facilities Review Series*. ERIC Clearinghouse on Educational Management, Eugene, Oregon. December, 1973 (22).

8. EFL. Places and things for experimental schools. New York: 1972.

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10. Kellor, Herbert. Five stories high, 36 programs deep. *School Shop*. April, 1969.

11. *School Management*, *op*. *cit*.

IV. SITE DESCRIPTIONS

This chapter describes career education programs at 21 sites across the United States. The programs were selected for their interesting use of facilities. They range from programs in the standard, unmodified classroom to programs in multimillion-dollar new buildings. For each program, the program goals and objectives are summarized and a discussion is included to show how the program staff went about selecting and implementing the facility to support the program. For some, several different facilities are used. The goal is to provide enough information about each program to allow readers to identify program needs that are similar to theirs. Information on the facility development is stressed.

Each description is accompanied by a series of photographs, showing the program's facilities and how they are used. In some cases, floor plans are included.

Programs are presented in alphabetic order by name of the program. Some programs have special names; for others, where there is no official program title, the name of the school or the district sponsoring the program is used. For readers who want to identify programs by other designations, such as geographic location, grade level, or type of facility, the index at the back of the book can be used.

BOP, Inc.

Overview

BOP, Inc. (Bingham County Office Program) is a mobile unit that simulates a mortgage and loan office, serving high-school students in Bingham County, Idaho, as part of the Bingham County Career Education project. BOP is designed to assist students in learning how to work in a business office. It allows students to determine whether they are interested in office work as a career and gives them a better idea of which specific office jobs are compatiable with their own skills and interests.

Description of Program

BOP is modelled after the Utah Mortgage Loan Corporation in Logan, Utah. It travels to five high schools in the county and serves students in grades 10 through 12. The simulated organization makes loans, receives payments, collects fire and hazard insurance payments, and conducts other business typical of a mortgage company (Photos 1-3). Students try out different positions in the company (Photos 4-8) and do the work as office employees; some students (Photo 9) play the role of outside customers, calling in to the company and presenting problems or complaints that the students in the office have to solve.

Students "apply" for whatever position they are interested in. They work for a chosen time in this position, and then progress through other positions. Jobs available include receptionist, cashier, insurance clerk, posting and tax clerk, vice president, executive secretary, and administrative assistant.

The simulation is constructed in four phases:

- a preproblem briefing that acquaints students with the facility and lays the ground rules for the exercise;
- positional instructions--a general orientation phase that describes the mortgage company and each position that is available and allows one day's rotation at each position;
- a simulation warmup that adds work that will help students understand the concepts and procedures, and allows two days at each position; and
- full-scale simulation involving three days at each position.

The business functions are outlined: they include financing and purchase of a home, the cycle of the coupon, the flow of funds including tax assessments and insurance premiums, and related activities.

In addition to specific skills, students are taught about work attitudes, and learn the meaning of such terms as "breaks," "tardies," "chain of command," and "dress."

Students are evaluated through the use of a special BOP Appraisal Form, which records the quality of their work, their ability to follow directions, and other measures. Copies of simulated business transactions are also made and put in the students' folders.

The Bingham County Office Program (Photo 10) is housed in a one-room mobile office unit measuring 12' x 45' (Photo 11). The unit contains a 15kw electric furnace and a three-ton refrigerated air conditioner.

Standard kitchen cabinets are used for overhead storage; counters are attached to wall studs and supported by legs as needed. Desks and office equipment are free-standing. The range of office equipment includes electric typewriters, adding machines, postage meters, telephones, file cabinets, rolodex, name plates--in short, all of the standard office furniture (see floor plan key). A used mobile home tractor (Photo 12) pulls the office unit from one school to another. It is stored behind the adminstrative offices.

History of Facilities Development

The program was designed by a committee consisting of a representative from each of the five districts served. They wanted to create a "capstone" for the office practical curriculum. They had seen prepackaged office simulation materials that were used in traditional classroom settings and had felt that the experience was not "real" enough. Even though new desks and office equipment had been moved into the classroom, it still remained a classroom. They also realized that they did not need to locate a specialized facility on each of the five campuses, since it would not be required for constant use all year round.

All of these considerations prompted the idea of using a mobile unit that could be designed and equipped like an office and would move from school to school, spending one-fifth of the time at each school.

Simple plans were submitted to three mobile home builders for bids. Manorwood Mobile Home Builders in Caldwell, Idaho, submitted a bid of $8,500 for the unit; the bid was accepted by the committee. This cost and $8,000 for office equipment was financed with a USOE grant under the Vocational Education Amendments Act, Part D, of 1968.

Plans for the mobile unit were reviewed by the state. Only one modification was needed. The electrical heater required more power than could be supplied by the standard power line that would run to the mobile unit, and the district resolved this problem by running two lines (see Photo 11).

The yearly operating expenses of BOP include the following:

1.	One Professional Staff person	$9,000
2.	Utilities	425
3.	Maintenance	150
4.	Office Equipment Rental (Mag. Card.) $185/mo. x 12 mo.	2,220
5.	Equipment Replacement	350
6.	Subscriptions to Magazines	90
7.	Postage	50
	Total per school year	$12,285

All expenditures are paid by the Career Education Fund except for the utilities, which are paid by each school where the unit is parked.

A third-party evaluation has been made each year for the past two years by the College of Education at Idaho State University in Pocatello, Idaho. Their reports indicate that the program is quite successful in its present form and that it should continue with little or no modification.

The facility has also been quite adequate but the Director has indicated a few changes that he would suggest to potential users of mobile units:

1. To ward off vandalism, the exterior doors and door jambs should be made of metal, not wood, because metal doors are much harder to force open. Lights should be placed above each exterior door and kept on at night.

2. To save construction costs, they eliminated all windows from the original design but now feel that a few windows, no matter how small, should be added for the comfort of the users of the facility.

Photo 1

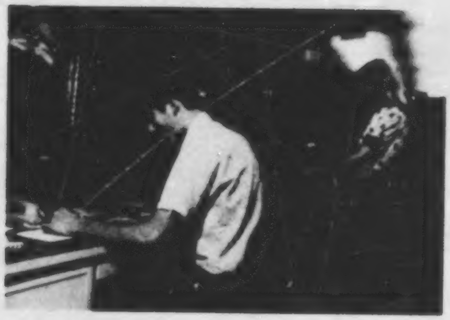


Photo 2

Photo 3

Photo 4

YOU
HAPPY
DAY SEASON
RECEPTIONI

Photo 5

Photo 6

Photo 7

Photo 8

Photo 9

Photo 11

Photo 10

Photo 12

FLOOR PLAN KEY

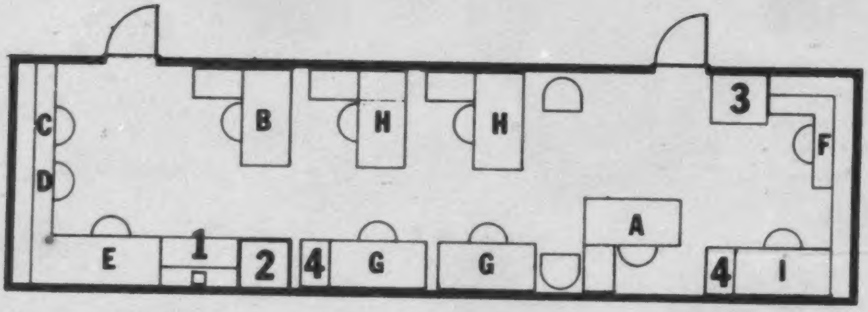
Bingham County Office Practice

ACTIVITY AREAS

A	Receptionist
B	Cashier
C	Insurance Clerk
D	Posting
E	Tax Clerk
F	Administrative Assistant
G	Vice President
H	Executive Secretary
I	Teachers Record Station

EQUIPMENT/SPECIAL FEATURES

1	Time clock
2	Heater
3	Closet
4	File Cabinets



BOWLING GREEN

Overview

The career education program in Bowling Green, Kentucky, is a comprehensive educational program serving all 5,000 of the district's students. The three-year funding for career education was used for the development and purchase of curriculum materials for teachers, who were encouraged to design their own programs. Special facilities are not used; career education is integrated into the regular classroom, and different arrangements are made to accommodate the different programs. The program is centered around the teacher, the student, and the individual in an occupation. The curriculum has been, in the words of the program director, "revitalized" to provide the student with a continuing experience that aids in the development of an awareness of the relationship of self to home, school, and community, through field observations and exploratory experiences integrated with academic instruction. This program serves as an example of one that operates without special facilities, using only the classroom.

Program Description

The program is called Project PEOPLE, an acronym for Personal Enhancement of Occupational Preparation through Life-Centered Education. In the elementary grades, students have the opportunity to become acquainted with a variety of occupations, using USOE's 15 job clusters as a reference point. The junior high students build upon their awareness of the world of work with the opportunity to experience "hands-on" activities in the Practical Arts program. This area allows them to select ten of the fifteen job clusters for in-depth study and manipulation of the basic tools used in various occupations. There is intensified guidance at this level, to help the students assess themselves and their capabilities. During high school, students pursue their tentative career choice with a program of studies that will prepare them for future work. An on-campus vocational program provides students with a variety of experiences. All secondary academic areas include career education unit studies. An on-campus placement service offers positions in either part-time or full-time jobs.

One of the most important features of the Bowling Green program is that all of the career education study is conducted in the regular classroom, integrated with the other studies: every subject is made relevant to the world of work. Each year over 1500 people from the community come to the school to describe their careers.

One sixth-grade class learned about manufacturing by establishing a miniature factory to produce placemats. The class borrowed money from the school to purchase the necessary equipment. The students then established work schedules, learned to make the placemats, and sold the finished products, using money from the sale to pay off the loan, and using profits to pay for field trips and classroom equipment. According to the teacher, every academic subject was incorporated gracefully into the factory operation: e.g., mathematics, to figure profit rates, and English, for the writing of reports.

The tasks required to produce the placemats (Photo 1) were organized as an assembly line along one side of the room. The first task was to fill out a job application form and to file a timecard in the appropriate pocket (Photo 2). The next task was to cut pictures out of Christmas cards in the cutting department (Photo 3). In the placing and gluing department (Photo 4), the pre-cut pictures were selected and arranged and then glued to a piece of cardboard. The painting department then put on a waterproof coating.

At the first-grade level, a scale-model village (Photo 5) was built to promote an awareness of careers. In a fourth-grade project, students interviewed community volunteers who came to the classroom to discuss their careers. The class wrote questions that they wanted to ask and hung them on a metal stand (Photo 6). During the interview, each student recorded the responses to the questions and kept them in his own file (Photo 7). A round table was used to create a center for making stuffed animals (Photo 8). When the stuffed animals were completed the students wrote about them and hung their stories on a bulletin board for the class to read (Photo 9).

At the Junior High level, the library is often a focus of attention. When telephone calls are made to special people to ask about their careers, two or three classes of students gather around the conference phone to ask questions and hear the responses (Photo 10). The library also houses audio-visual equipment, where students can see and hear career-related information (Photo 11).

Junior-high shop students learned about the construction industry by building a scaled-down mock-up of an exterior wall of a frame house (Photo 12). They read about the process, used all of the related tools, and secured a building permit.

Careers related to photography (Photo 13) are explored in this Junior High classroom. The folding chairs used by the students are easily moved to create small- or large-group discussions and to stage plays for video-taping.

At the Bowling Green High School, a large classroom is used to simulate a model office, the APEX Association (Photo 14). Nineteen students are employed as receptionist, mail clerk, typist, regional statistical clerk, billing clerk, payroll clerk, copy and design clerk, file clerk, or machine operator. The program uses prepackaged materials called "The Office: Reality Training through Simulation," provided by the 3-M Company. The initial cost of the materials was $1200 for 20 students; $200 per year is needed to replace materials. There are approximately 30 APEX branch offices in the State of Kentucky and many others throughout the United States.

History of Facilities Development

Career awareness began in Bowling Green in the summer of 1971, when the Board of Education approved the following resolution:

> "The Bowling Green Board of Education recognizes a need for expanded curricular opportunities for all students. Therefore, the Board of Education hereby commits its effort to complement the pursuit of academic excellence with a world of work curriculum designed to develop a respect for the dignity of honest labor and to satisfy an increasingly greater demand from students, staff and the community for an occupational program, one designed to provide for the achievement of these goals. We further pledge our efforts to the implementation of this curricular expansion and have directed the administration to utilize the provided facilities by engaging and training a staff, designing a program and acquiring the equipment necessary to facilitate the best results possible for the youth of our community."

With the Board of Education's commitment to the career awareness program, the next step was to design a program to accomplish the goals outlined in the school board's resolution. The task of designing such a program was given to the teachers.

The principal, guidance counselors, and selected teachers from each city school attended a four-week workshop during the summer of 1971 to design a program that could be implemented in every classroom in the school system by the fall of 1971. The result of the workshop was "Project PEOPLE."

The program was designed almost completely by local teachers, with the goal of introducing and integrating career experience in the classroom. The teacher-design aspect is an important feature: the philosophy that the district adopted was that career education should be academically oriented. A broad format was developed that could be used by all teachers at all levels K through 12. The teachers took the 15 career education clusters developed by USOE and assigned different ones to different grade levels, to ensure that students would not repeat clusters as they moved from one grade to another.

The facility that would support the program at the elementary level was to be the regular classroom. No other options were considered; the staff of the school felt that, given training, teachers could teach career education effectively without special facilities.

Programs at the junior-high and high-school level are conducted outside of the classroom. Exploratory programs use existing home economics and industrial arts facilities, while high school programs are done in a room that was originally constructed to house typing classes and other office activities. The simulated business is located in that facility, which required little modification beyond the addition of dividers to separate the many different activities that occur there. All career education except the practical arts program at the junior high level is funded within the regular school budget. The program staff feels that the program is successful, not because of special facilities or equipment, but because teachers have key roles in designing the programs and because career education can be taught effectively in standard classroom areas.

A survey was made of all teachers in the school system; 98.5 percent said they thought the program helped make education more relevant to the students. Students also indicate that the program is popular with them. The program also has won praise from a seven-member special review team appointed by the Kentucky Department of Education.

One evaluator has said, "If I had to select a junior high school in this country that I've been in, and I've been in lots of them, that came closer to exemplifying what a junior high school ought to be doing and the implementation of the Career Education concept, I'd come to Bowling Green Junior High School."

Photo 1

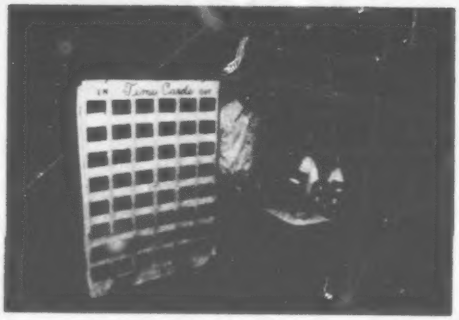


Photo 2

Photo 3

Photo 4

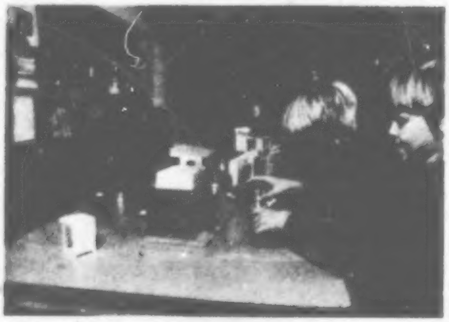


Photo 5

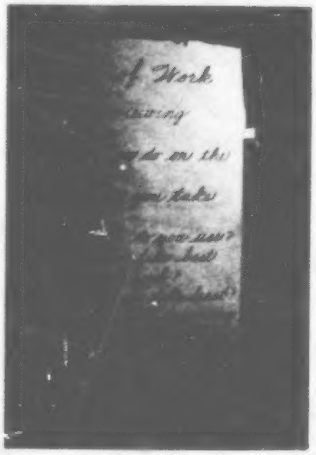


Photo 6

Photo 7

Photo 8

Stuffed Anim

Photo 9

Photo 10

Photo 11

Photo 12

Photo 13

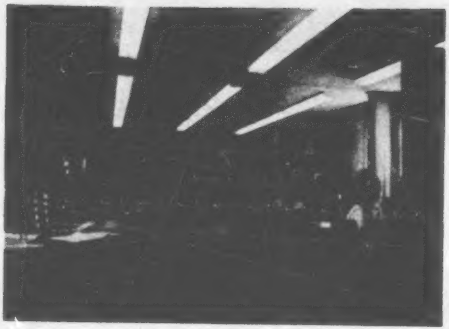


Photo 14

BRIDGEPORT

Overview

The Bridgeport, Conn., program is a city-wide program designed to provide comprehensive career education instruction in grades K-12. The program has different objectives for the various grade levels served: children in grades K-3 gain an increased awareness of jobs in the home, school, and community; students in grades 4-5 are informed about careers in state and national government as well as local, state and national industry; students in grades 6-8 explore career clusters; students in grades 9-10 prepare themselves in their own career-interest areas; and students in grades 11-12 take part in skill training programs both on the campus and in work situations in the community.

Program Description

The Bridgeport program begins in the elementary school and continues through post-high school. It has three basic functions: "Preparation for career choice through the study of self-appraisal or self-realization and occupational information; career preparation" (through basic and specific skills); and "placement and followup."

The project is developed through the cooperation of elementary and secondary teachers, vocational technical high school personnel, the community college, the adult education director, the guidance specialist, guidance counselors, the librarian, and media center specialists. Guidance involvement is reflected in all levels K through 14. The emphasis on skills is very important, beginning with basic skills at the lower elementary school to more specific skills as the student progresses through high school and beyond. There is particular importance given to decision-making skills to allow students to make career choices.

The goal in the elementary and middle school years is to develop an understanding of self and of the dignity of work rather than specific job skills. These are taught later in the high school and beyond.

Practically, in grades 11 and 12, the vocational program works along the following general lines: Three waves of students--15 per wave--enter one skill area for one double period a day. Every day, for example, an electronics teacher trains 45 students a day in the course of 3 double periods. Students elect their own skill areas. Students in the program spend only two periods a day on career education. They also take regular academic subjects (for example, one period of math and one period of English a day).

The program was originally funded as an exemplary project in career education (Part D of Public Law 90-576) by USOE for the years 1971-74, receiving $1 million. The program is now locally funded at $450,000 annually. The budget is broken down by subject (skill) areas; for example, welding has its own budget.

The following framework is provided for the instructional program:

Elementary schools: Awareness and Orientation
Middle schools: Orientation and Exploration
Senior High Schools: Continued Exploration, Preparation, Placement and Advancement
Post-Secondary: Continuing education--Upgrading and Retraining

This framework establishes specific program goals at each educational level and enables the development of a career education curriculum from kindergarten through post-secondary for all students. The program component at the high school level is the focus of the present description. It provides for the continued observation and exploration of occupations. Emphasis is placed on career clusters and "real life" goals. Curriculum units were developed for career exploration study in the areas of English and Social Studies in grades nine and ten at two of the city's high schools.

The curriculum team consisted of teachers, administrators, guidance counselors and career education staff. It was decided that career education was not to take the place of general or academic and vocational education, but to enhance both. It is part of a well-rounded program of education aimed at developing citizens who are competent economically, socially, emotionally, physically, and intellectually.

For career education to be successful and relevant in Bridgeport, several propositions are to be considered fundamental to all career education. First, it must be actively and aggressively pursued in a manner and in an environment that avoids discrimination among its clients. Second, career education can and should be undertaken by everyone. Third, career education personnel will design vocational education programs to be implemented between secondary schools and post-secondary schools and between these institutions and the business sector. Fourth, vocational education programs will be personalized in a way that offers skill training and academic stimulation as a desirable and needed blend.

The secondary-level program has the following components:
School Program and Career Education (SPACE). The School Program and Career Education (commonly referred to as SPACE) project is a co-operative educational program of business, industry, and the high school. It is a course of study in which students are provided with a relevant, realistic school and employment experience in preparation

for the world of work. Students attend school for two weeks and then work for two weeks, throughout the school year. The school curriculum is related to the work training provided in the business of industry. While they are on the job, students are paid entry-level wages and receive close supervision from personnel within that agency.

Cooperative Work Experience in Diversified Occupations. This is a program of vocational education achieved through cooperative arrangements between the school and an employer. It provides systematic, organized on-the-job training and related vocational instruction in the school.

Work Experience Program for the Handicapped. This program is designed to provide on-the-job experience and related in-school instruction for handicapped students currently enrolled in special education programs.

Distributive Education Program. This program is designed to provide the student practical and theoretical knowledge required for the distribution and marketing of consumer goods. It is a two-year program with actual on-the-job experience provided during the second year.

History of Facilities Development

This program was developed in an effort to overcome the mis-match between the unemployed and the available job openings in the Greater Bridgeport area. The Bridgeport project team organized many resources to help it accomplish its aims, and the community has been a very important element in the program. Through the efforts of the Career Education Advisory Council and the University of Bridgeport, a Career Guidance Institute was organized to "encourage constructive dialogue between the local business and educational communities." The Institute enrolled fifteen educators and a similar number of businessmen in the spring semester. In addition, the American Association of University Women helped by developing resource files of materials and local private hospital personnel helped to develop programs in the allied health field.

Originally, the program used facilities at the Vocational Opportunity Center, which served both students and adults in the greater Bridgeport area, but it was felt that all the educational needs of high school students should be met within the school itself.

Facilities at Bridgeport's secondary level are of special interest. Three 60' x 24' relocatable buildings are used for the skill training programs (Photo 1). At one of the city's two high schools, there are two 12' x 56' units (Photo 2): one houses the food services program (Photos 3 and 4) and the other houses electronics (Photos 5 and 6), welding (Photos 7 and 8) and health services (Photos 9 and 10). The second high school has a similar electronics/welding/health services unit. Students here are eligible to make use of the food services unit at the other school as well. The "relocatable units," made of wood frame, with a cinderblock foundation and installed on concrete piers, were designed by the Director of Career Education, a former industrial arts teacher. An architect was hired to approve the plans and ensure that they complied with State regulations.

This type of facility was chosen for the following major reasons: (1) their quick availability, compared with constructing a new building or adding on to a building where construction can take up to two years; (they can be constructed in a couple of months, transported by truck, prewired, and installed within a day or two; (2) their lower cost compared to new-building construction; and (3) their flexibility, which allows them to be moved to other locations, if, for example, there is a decline in enrollment at any given high school. They also met a programmatic desire to keep students with their own peers and in their own school for their career education experiences.

It was necessary to purchase new equipment comparable to what students would find in industrial occupations: the welding unit had to include electric, gas and heli-arc welders for instructional purposes and practical application. Band saws, drill presses, work tables, portable grinders, abrasive cut-off machines, hand tools, safety apparatus (e.g., goggles, protective clothing, helmets) are other examples of equipment that was acquired for the welding unit.

The electronics unit needed such items as electronic oscilloscopes, tube testers, sign wave rejuvenators, testing equipment, work tables and handtools such as soldering irons and pliers. The health unit required hospital beds, bedside units, chase dolls (mannequins) and other hospital equipment. The food services unit acquired equipment comparable to "the best restaurant in town": ovens, baking units, and salad units.

The project staff worked with the Board of Education and local building officials in designing the original plan. For example, the utilities company was consulted about gas and electrical requirements; the Public Works Department was asked about sewage regulations. Skilled local tradesmen were also consulted. Careful attention was paid to building codes and fire regulations in the facility's design, for example, to ensure that fire extinguishers were adequate and that the building would be usable for a period of not less than ten years.

When the design was completed, a public hearing on the plan--advertised in the press--was held before the Board of Planning and Zoning. Upon their approval, one local contractor was hired who could construct the relocatables in his own plant, transport them to the site, and install them. Most building inspections were conducted at the plant where the units were constructed.

Facility construction went quite smoothly. The project staff, who stress that each situation is different, advise others who attempt to construct similar facilities to abide carefully by state and local rules and regulations, city and state building codes and school building codes. For example, in Connecticut, buildings must have ramps installed, so that handicapped parents can visit the school. In addition, it is important to predict long-range facility useage, particularly increased use, and design facilities which allow for program and/or student enrollment expansion.

Project staff convey mixed emotions about the program's adequacy. They feel that the relocatables should be bigger, to make more room for related training and separate space for skill training. It is also felt that the project will have to predict better, probably increased facility use over the long term. The addition of new programs is difficult at the present time because the facilities are too small and additional space will have to be found within schools in the area.

The pinpointed problem is, again, in the need for adequate funding. The funds that are available meet a basic need for vocational education programs in the area, but additional funds could support separate buildings to house different skill areas (e.g., welding, electronics).

There is a trend toward decreased school enrollment in the area, which may open up space for additional fields of concentration.

Photo 1

Photo 2

Photo 3

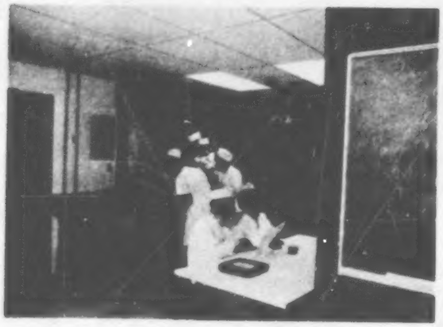


Photo 4

Photo 5

Photo 6

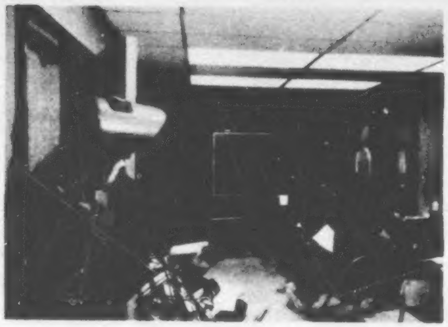
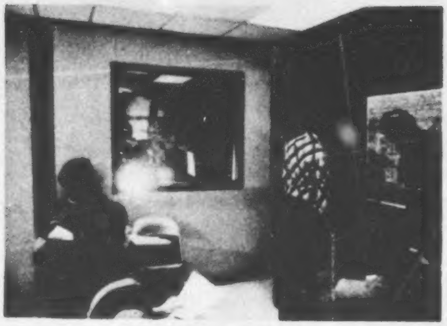


Photo 7



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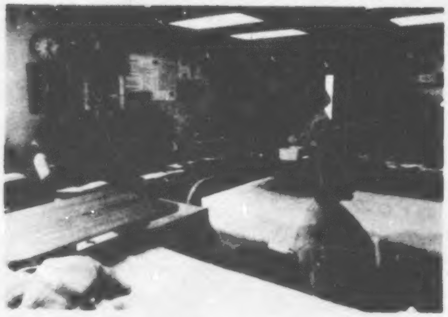


Photo 9

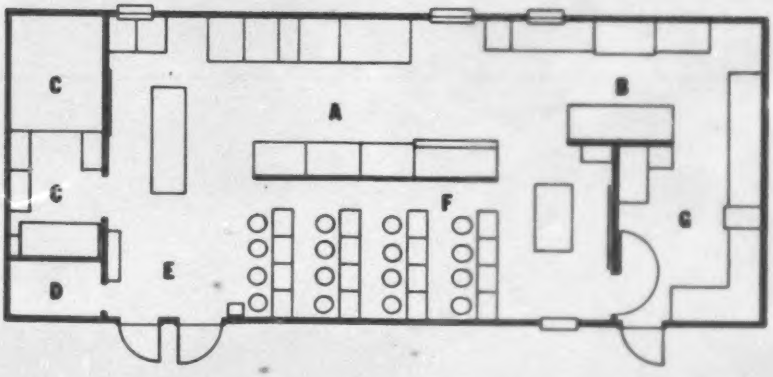
Photo 10

FLOOR PLAN KEY

CENTRAL HIGH SCHOOL
FOOD SERVICE FACILITY

ACTIVITY AREAS

A	FOOD PREPARATION
B	BAKING
C	STORAGE
D	LAVATORY
E	RECEIVING
F	CLASS AREA
G	DISHWASHING



FLOOR PLAN KEY

CENTRAL HIGH SCHOOL
VOCATIONAL TRAINING FACILITY

ACTIVITY AREAS

A WELDING
B ELECTRONICS
C HEALTH

EQUIPMENT/SPECIAL FEATURES

A WELDING

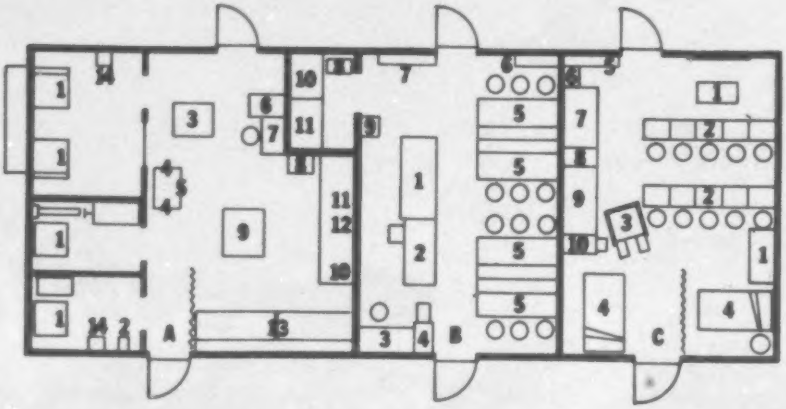
1 WELDING STATIONS
2 STUD WELDER
3 METAL WORK TABLE
4 VISE
5 ANVIL
6 FILE
7 DRILL PRESS
8 SINK
9 CONTOUR MACHINE
10 WORK TABLE
11 CUTTER
12 BAND SAW
13 WORK BENCH
14 GRINDER

B ELECTRONICS

1 WORK TABLE
2 DEMONSTRATION DESK
3 STORAGE CABINET
4 FILE
5 WORK BENCH
6 BOOKCASE
7 RACK
8 TELEVISION
9 SINK
10 TABLE
11 TRAY RACK

C HEALTH

1 BED STAND
2 STUDENT DESK
3 WHEELCHAIR
4 BED
5 RACK
6 SINK
7 COUNTER
8 BASSINET
9 CRIB
10 FILE



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DADE COUNTY

Overview

For the past three years, Dade County has been developing a "Career Model K-Post-Secondary and Adult" educational system with a broad and well-integrated curriculum designed to provide educational and career success for all youth and adults, a system with built-in options and alternatives. The system is designed to "turn on" youth, educationally, by demonstrating to them that learning is enjoyable and meaningful.

The system operates in 12 pilot schools: seven elementary, one junior high, one high school, and one adult education facility. The goal is to meet individual student educational needs before the child has a chance to drop out of school or graduate with insufficient preparation for continuing education or finding employment. Those who discontinue the program can reenter at any educational level.

Program Description

The elementary-level programs are the focus of this description. Each of the seven pilot elementary schools has a career laboratory. Every student in the school spends one hour in the lab once or twice a week exploring one of 35 different activities outlined in the self-instruction "learning activity packages" that have been developed by the project staff (in cooperation with teachers) and illustrated by the project curriculum designer. Small areas of the room, or centers, have been developed to accommodate each career (Photos 1-9): e.g., receptionist, waitress, seamstress, dental technician, criminal justice employee, printer, secretary, and soil scientist. Each lab also has a career corner where career-related media can be accessed (Photo 10). The career lab staff helps the students keep records of the activities they have experienced, and provides follow-up on materials that might be of interest (Photo 11). While most of the class is working at the centers, the regular classroom teacher can work with a small group of students who need special attention (Photo 12).

Programs at the junior-high level operate somewhat differently, with a separate classroom for each of 12 career cluster areas: e.g., health, food preparation and distribution, and business (Photos 13 and 14). Each cluster contains comprehensive equipment and materials related to that occupational area.

History of Facilities Development

The Dade County career education program evolved from a project supported for several years by the U.S. Office of Education's Exemplary Education funds, which concentrated on drop-out prevention in the junior high schools. A project administrator commented, for example, that some of their current, on-going activities, particularly at the junior-high-school level, have actually existed for a long time but were simply renamed "career education."

The current career education project is inherently different from the earlier exemplary project from which it evolved in its emphasis on cooperation between vocational education staff and local academicians, such as principals, teachers, and department heads. For example, a language arts teacher and a math teacher are on the project staff; this helps to promote the integration of career awareness with "regular" academic courses.

Four years ago, State Vocational Education monies, earmarked for summer workshops, were used for a 3-week brainstorming session to begin to develop a philosophy of education, at the elementary-school level, which would be related to the world of work. About 15 teachers and vocational education department staff participated in the workshop. Their conclusion was to plan an activity-based program. The principal of a local elementary school volunteered her school as an experimental site for field-testing program activities after they were developed. She also made available the school's fully equipped industrial arts laboratory and home economics laboratory for career awareness activities.

No other facility options were considered for these initial activities because the space was readily available and well suited to the basic programmatic ideal of integrating career awareness with other learning activities. Furthermore, the positive support of the school principals who offered the space was considered an important reinforcement to the program's foundation.

The Exemplary Program staff, with the assistance of one local teacher who was very experienced in carrying out vocational education projects, began to design hands-on activities in a few areas (now increased to 35), such as electronics, typing, and medicine. With exemplary funds, they bought such equipment as a cash register, an electronics soldering outfit, a calculator, scales, and a blood-pressure unit.

As the Dade County Elementary School enrollment declined and more empty classroom space became available, additional projects were developed in other schools. There are now seven elementary schools involved in the pilot program.

Little or no remodeling has been involved in these pilot projects, and no architectural or construction assistance was enlisted by the project staff. At Orchard Villa, for example, the principal made available three classrooms in a separate building adjacent to the school. These classrooms were separated by portable partitions; a very large career awareness laboratory was established simply by taking down these partitions. Regular academic subjects were also taught in the lab, usually "off in a corner."

One school required plumbing in the empty classroom it made available for lab space, but the principal of this chool assumed responsibility for the mechanics and costs of installation.

At Little River Elementary School, a wall between two classrooms had to be knocked out to set up the lab, but this task, as well as some painting, was done by the project staff with no additional assistance.

It is felt by project staff that the major linkage between the work community and the Dade County schools is the occupational specialist. Ninety-six occupational specialists are distributed throughout the State; two are assigned to the elementary schools and help with career projects, and others assist at the junior-high-school level. The occupational specialist assists by arranging such activities as field trips to local places of work and visits to the school by people in various occupations (including parents) to explain exactly what their work involves and to answer students' questions.

The staff submitted a proposal to the State Department of Education, which was dispensing $4.5 million for career education programs throughout the entire State of Florida in 1974-1975. The proposal was originally written after a year of planning by an in-house consultant and a committee composed of teachers and others from within the school system, including one principal and several guidance counselors. It was originally submitted to the county, which made certain necessary changes before submitting it to the State.

The budget is broken down by gross categories such as salaries, equipment, travel, and supplies. Yearly renewal proposals are required; so far, one has been written. The expected allocation for next year is half of the initial support given, but supplementary monies are being sought from local sources and the school district.

The school district has its own evaluation division, which reports to the superintendent of schools and is responsible for the career education program evaluations. The career education staff articulates its own goals and objectives, which the evaluators adopt as evaluation criteria, using instruments they themselves design or purchase. Actually, only one evaluation has been performed on the project since it was initially funded by career education funds (1974).

Project weaknesses perceived by the staff are mainly related to staff development and size. Anyone undertaking this type of project should, the staff warns, be sure to have an adequate supply of trained teachers. Toward this end, there should be people on the staff whose specific task is to give teachers guidance and help. "You can't send teachers a career kit and expect them to just use it effectively," one project coordinator commented. A separate proposal recently written and submitted to the State would, if funded, provide for career education staff development.

People involved in the program now feel that the learning labs should have been better equipped from the beginning, and that written material should have been of better quality. People in various professional fields were hired to write the curricula, which were good in a technical sense, but in need of revision for educational content. It is felt that a general editor, knowledgeable in the field of career education, should be hired to edit the curricula.

The staff thinks that one of the reasons their project is successful is that, in their initial planning stage, they located school principals who were both willing to donate and actually had available space; the program thus got off the ground quickly and avoided a considerable amount of bureaucratic red tape. Their advice to anyone undertaking a similar project is to adopt a similar approach.

The project has submitted a five-year master plan to the State. If funded, all 35 of the elementary schools in the county not currently involved in the pilot project would gradually be added; one occupational specialist would be assigned to each school. It is also being recommended that all newly constructed schools include an elementary career awareness lab.

Attempts will be continued to further integrate career laboratory activities and classroom work. Already some math-related activity kits have been field-tested in the school labs. Experimental and control groups have been established, and a pre/post-test evaluation using matching samples indicates that the math achievement of students who used the kits rose to a level 11 per cent higher than the control group. Additional basic-skill activity kits--for example, in English--will continue to be packaged, jointly, by project staff and teachers. Reading packages for teachers to apply to teaching their regular subjects will be developed.

It is also hoped that five additional fields will be added to the elementary-level program (probably including fine arts and graphics).

Photo 1

Photo 2

Photo 3

Photo 4

Photo 5

[illegible]oto 6

Industrial
ARTS

Photo 7

Photo 8

Photo 9

CAREER
CORNER

Photo 10

Photo 11

Photo 12

Photo 13

Photo 14

DAYTON CITY SCHOOLS

Overview

The Dayton, Ohio, career education program, developed by the Ohio State Department of Education and implemented in 1969-70, serves K-10 students in about 25 urban and suburban schools. It is organized into three phases: career motivation; career orientation; and career exploration. About twenty elementary, 17 junior high and 4 high schools are currently involved in this program, whose overall goal is to relate all classroom activities to the world of work. Seven career education concepts are woven into the total student curriculum, to promote individual development: the will to work; self-awareness; education and training; employment and work adjustment; decision-making; economics; and environment. Program approaches and emphases vary among the three different phases. In addition, students in grades 9-10 are exposed to USOE's 15 occupational clusters. In their junior and senior years, students are prepared to be able to enter Dayton's vocational education program to concentrate on acquiring skills in specific occupational areas. An outstanding feature of this program is the emphasis it places on in-service training for teachers in career education.

Program Description

Career Motivation, for students in grades K-6, emphasizes the development of positive attitudes toward: the concept of work; the assumption of responsibility; and the relevance of career decisions to the quality of life--including social and economic status. Career Education concepts, goals and objectives are infused into all daily classroom activities and reinforced by "hands-on" experiences at school (e.g., weaving, knitting, carpentry) and field trips to various occupational environments throughout the community. Students talk with people of various occupations and play various occupational roles. Parents are encouraged to describe to students what they do in their own occupations.

Career Orientation is for students at the junior-high level; it includes the objectives and activities of the Career Motivation phase but begins to emphasize occupations themselves rather than more abstract concepts of work. Here, students are exposed to specific jobs within the job clusters outlined by USOE and become more involved in field experiences, such as "seeing tires being made, hearing the vibrations of airplane engines and observing the stillness of a forest" (the words of a descriptive folder). Other activities include mock job interviews and visits to local business and industry sites. Academic subjects continue to be infused with work-related concepts and topics. For example, in social studies, students might study what a politician's work and election are actually like.

The Exploration Program, for grades 9-10, is designed to help students make tentative career decisions and select a course of study in their first two years of high school, adapted to their own interests and abilities. In this phase of the program students look in-depth at actual careers related to their own selected subject areas. On-the-job experiences are important at this level. Students are provided with as much information as possible about the educational prerequisites of certain jobs, and the general aptitudes required. Special ways of presenting these types of information include field trips, guest speakers, films, career clubs, tapes, pamphlets, and demonstrations.

Two classrooms in one of the City Schools became available to the project because of decreased enrollment and were converted into a resource center that contains small tools and equipment. One full-time resource facilitator and four other assistants shared with the industrial arts department to prepare projects. For example, lumber was pre-cut for a class project to construct a loom. Students had to do some of the wood-cutting themselves (Photo 1). The Resource Center also contains examples of students' work that other teachers can observe, to get ideas for developing their own projects. Training workshops for teachers, a major program component, are held in the resource center, as well as in the individual schools themselves. In the workshops, teachers are taught by the knowledgeable resource facilitator and his assistants. They learn how to use the small equipment and materials in designing and carrying out hands-on projects for their students.

In addition to the equipment in the resource center, a typical workshop in an elementary school contains benches, tools and power equipment that can be used in the classroom. For example, a jig saw is mounted on casters so that it can be moved from room to room for different projects (Photo 2). Four minibuses (each seating fifteen persons) are leased to take small groups of children to career sites (Photo 3).

The program also publishes a tabloid-sized newssheet, edited by the director of career education, containing articles on the progress of career education throughout the entire state of Ohio.

History of Facilities Development

Proposals were written by two schools, simultaneously, each unaware of the other's plans, and submitted to the State Vocational Education Department to implement a pilot career education project in the school year 1969-70. When funds were received, the two plans were combined into a single program, involving a total of 41 schools. Renewal proposals are written annually and the project has continued to receive State and Federal Vocational Education monies. The budget is broken down by cost per student, per year. There is a very small budget for equipment, which is mostly used for audiovisual aids, books, papers, and small equipment for hands-on activities (e.g., wood, yarn, and hand-saws). Special state approval must be obtained for purchasing any piece of equipment costing more than $25. This inhibits the acquisition of large equipment, but the staff feels that only small, portable handtools and materials are needed to carry out its programmatic goals.

Consistent with the program's underlying philosophy of continuously infusing regular classwork with work-related concepts and experiences, the most desirable option for the project facility, and the only one considered, was to use existing classrooms and have every teacher "teach" career education. Local community resources (business and industry) provided exposure to real working environments. Transportation to the "worlds of work" was made possible by the lease of the four minibuses.

Informal self-evaluation of the project is performed on a continual ongoing basis, by both the project administrators and teachers who are asked to make periodic reports or to fill out questionnaires about their perceptions of program effectiveness. In addition, an evaluation component is part of the contract, which requires that the project hire an outside consultant to carry out the evaluation. All evaluations have been basically positive. The project staff feel that consideration for teachers, including their inservice training, is intrinsic to the program's success, and they recommended strongly that anyone undertaking a similar project consider including an inservice training component.

The project currently involves roughly 35 percent of the schools in the city and hopes to expand into all schools in the Dayton District soon.

Photo 1

Photo 2

Photo 3

FAR WEST LAB SCHOOL

Overview

The Far West Laboratory for Educational Research and Development is sponsoring a community-based career education center that is centrally located to real-world activities, where students can develop projects and work in the community in different occupations. The focus of the program is on grades 10 through 12. The concept that animates the school is that basic knowledge and skills, if they are to become relevant to students, must be used in everyday life rather than in artificial classroom situations. Career preparation must, it is believed by the staff, become an integral part of a person's education; thus, the school encourages students to see life itself as a learning process.

Program Description

The Far West School is an exemplary high school that enables 100 students to utilize the entire community as a learning resource and helps them to choose and find satisfaction in an adult life (Photo 1).

The students work in the community individually or in small groups, choosing their projects from possibilities suggested by learning coordinators. During the 1974-75 school year, a cancer research program at the University of California accommodated several students. An advertising executive for the Chevron Oil Corporation worked extensively with a group of five students who learned about various aspects of the advertising world and then organized themselves into an advertising agency. This group presented a portfolio to the owner of a restaurant in the building which houses the school's office, pointing out how his business might be improved and offering to help him. Under the guidance of the Chevron executive and their learning coordinator, the students proceeded to analyze and advertise the business as though they were a professional advertising agency. Each of the students involved used this activity for different credit purposes, some for English, some for business, and some for combinations of these.

The staff of Far West School (Photo 2) consists of the Director of Operations, four learning coordinators, a skills specialist, a workshop leader, and secretarial support.

The students get free bus and BART tokens to make trips to community resources that have agreed to help them develop their projects (Photo 3).

Each learning coordinator helps approximately 25 students to plan their own learning programs (Photos 4 and 5). They meet periodically in large groups in conference rooms to resolve problems. Smaller office spaces are used for individual tutorial sessions and can be used by small groups working together on a project (Photos 6 and 7). One room serves as a resource center (Photo 8) with carrels for individual study and tables and chairs for group activities. One room (Photo 9) serves as a lounge/meeting area for the school. It has direct access to the patio on the roof. The students receive messages at a center located near the entrance to the office of the learning coordinator (Photo 10). Far West School occupies the (rented) top floor of a downtown office building with 22 rooms and a large patio. Each learning coordinator has a small office adjacent to a student activity room. There are four conference rooms, each of which can accommodate the learning coordinator and his 25 students. A set of open files helps students to locate resources. The skills specialist's office is part of a room that also contains study carrels for use with programmed instructional materials and equipment.

History of Facilities Development

When Far West School was looking for a facility to house its program, they had only a few requirements:

1. It should be located in other than a traditional school building.
2. It should have privacy.
3. A variety of spaces should be provided to support small group or tutorial work.
4. There should be one large space for meetings of the whole school.

One alternative that was considered was an old Victorian house located by a lake. This idea was rejected because the staff felt the atmosphere of the school would be too "soft" and the school would fail, as had other alternative schools that had elected to use an old house.

They decided that an office building would present the students with the right environment. In choosing the office building that would serve as a headquarters for the school, Far West Lab looked for a building near the center of the Oakland business district. Since each student needs to have access to every part of the city because the school does not maintain vehicles for transportation, an essential consideration was that the facility be located near public transportation facilities. After looking at eight different office buildings, they selected their present location; the rent is low, and it has a good central location. A similar school opening in Fresno will be located on the campus of a downtown high school near the center of the business district.

Little modification of the facility was required, and there were no problems with the Building Department concerning codes or zoning. The

Fire Department required that all doors that opened into the stairwells be kept closed. The manager of the building agreed to install the necessary partitions to form a few more cubicles and offices; this work was done by students because of union considerations.

The program has now completed a 3-year period of development and testing and is ready for adoption by school districts. The Oakland Public School District is planning to adopt the model and is presently formulating the procedures it will use, the number of students it will involve, and the number and location of facilities.

Photo 1

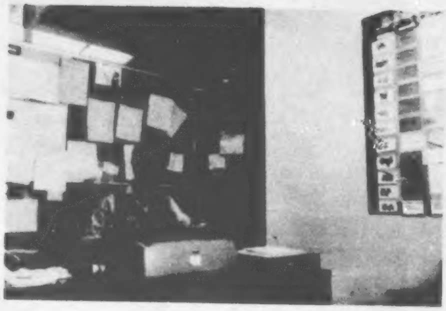


Photo 2

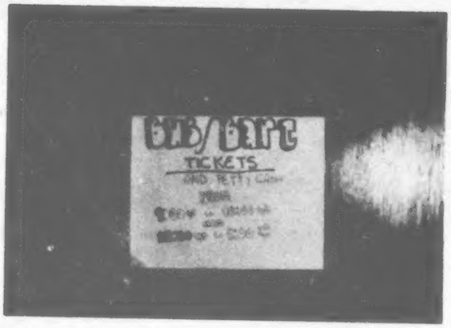

TICKETS
AND PETTY CASH

Photo 3

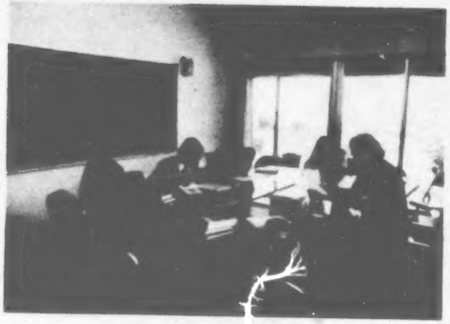


Photo 4

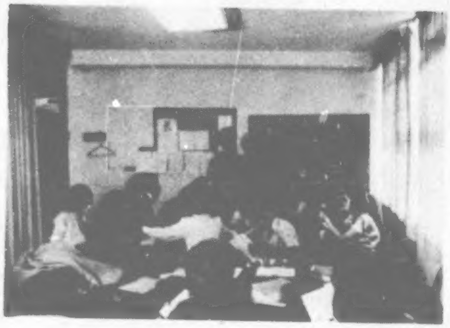


Photo 5

Photo 6

Photo 7

Photo 8

Photo 9

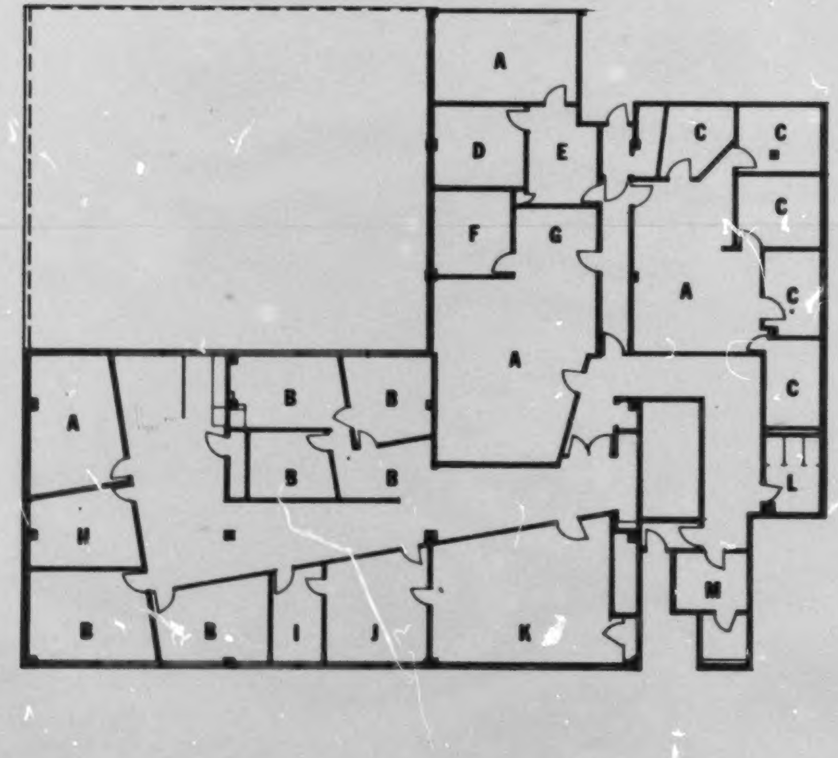
Photo 10

FLOOR PLAN KEY

FAR WEST SCHOOL

ACTIVITY AREAS

A	CONFERENCE ROOM
B	INTERFACE TEAM
C	LEARNING COORDINATOR
D	SCHOOL DIRECTOR
E	SECRETARY
F	RESOURCE ANALYST
G	RESOURCE FILES
H	PROJECT DIRECTOR
I	RECORDER
J	TUTORIAL ROOM/SKILLS SPECIALIST
K	PROGRAMMED INSTRUCTION LABORATORY
L	MEN'S TOILET
M	WOMEN'S TOILET



WORLD OF WORK GREENHOUSE

Overview

The World of Work Greenhouse at Harbor Heights School gives about 35 elementary-school students a year an opportunity to develop horticultural skills, not only to enrich their life-styles, homes, and leisure time, but to become equipped for eventual employment in the field of horticulture. By providing a thorough understanding of all components of horticultural occupations, combined with additional experience in marketing aspects of the field, the program gives students skills with which to make realistic career choices. Gig Harbor is a suburban, middle-class town adjoining Tacoma, Washington.

Program Description

The major program goal is to involve as many K-6 children as possible in greenhouse activities for both occupational and leisure-time benefits. The basic idea is that the children, in teams, work on some horticultural project and then sell their plants to the community. Profits made from the sales are returned to the Greenhouse to buy more pots, socil, and other materials and equipment. Thus, the Greenhouse, since its initial funding, has become self-supporting (except for utility costs, which are reimbursed by the school district).

The greenhouse is located in the central court of the school, very near the entrance to the sixth-grade classroom. The staff is composed of the teacher, who proposed and developed the program, and two other sixth-grade teachers at Harbor Heights School. The school principal, an administrative assistant, and the Director of Vocational Education for the school district are also involved in the project. However, practically speaking, the project appears essentially to be a one-teacher operation, with whatever *ad hoc* additional assistance he can muster from his colleagues (Photo 1).

Before working with the plants, students prepare the greenhouse itself by spreading gravel on the floor, painting benches, etc. As the cultivation of a variety of plants begins, one student assumes the watering chores for newly propagated plants. Other students assume other responsibilities (Photo 2).

Cuttings from the propagation bench are put into pots, and seedlings are started in small trays (Photo 3). A green net is placed across the total length of the greenhouse to deflect the sun's rays (Photo 4). Also, a shading paint is applied to the outside south wall in May of every year. Panels at the west side of the greenhouse can be opened during the hot summer weather to allow for adequate ventilation (Photo 5).

Tours are conducted of other greenhouses in the area, including Wright Park Conservatory and the University of Washington Arboretum greenhouses. Experiments with plants have been undertaken: controlling growth with a 1-1/2-volt battery, injecting hormones into stems, "talking" to the plants, and experiments with tropism (Photo 6).

The operation uses a fully equipped greenhouse built especially for this project on the school grounds. The greenhouse itself is made of 2-by-4-foot wood trusses with a fiberglass skin.

Equipment consists of gravel, benches, pots, trays, plants, seeds, simple laboratory equipment, fertilizers, and plant foods. The propagating bench along the north wall is heated. A heating system, connected to a delicate thermostat, keeps the air at a constant temperature.

An integral part of the program is the management and operation of the greenhouse as if it were a business. Greenhouse "bonds" are issued, payable on June 1st, with a 10% guaranteed return, and a bookkeeping system has been established for recording purchases and sales. Students may purchase plants, but, late in the school year, a public plant sale is also held; its proceeds are used, as mentioned earlier, to maintain the project.

History of Facilities Development

The goal of the program was extremely simple and precise and allowed for only one facility option--namely, to build a greenhouse on the elementary school grounds that would expose children to both the leisure time and the occupational aspects of horticulture. It was hoped to involve as many children as possible in the project.

The program was started with the help of an RCU grant of $2,044, provided under Part C of the Vocational Education Amendments of 1968. Additional monies were provided by the school district, local sources (including donations), and a grant from the Coordinating Council for Occupational Education. The total cost of building and obtaining equipment, including supplies, for the program's first year of operation was $3,299.82.

A 10-by-10-foot greenhouse was originally proposed to the school district, which provided $2,000 in funds. When the State heard of the project, however, it suggested building a 20-by-40-foot facility that would accommodate more children, and the State provided an additional $1,500 to make this possible. Then, a Federal employment program (PEP) provided the project with unemployed carpenters to assist in building the facility. The original total budget was for materials, equipment, and labor only. The greenhouse is now self-supporting (except for utility costs borne by the school district) and, mainly, operates from sales--$300, for example, last year. Its budget is clearly separable from the total school budget.

The greenhouse was also designed to promote a good relationship between the children and the community. Children sell plants, and community people provide materials such as pots. In addition, the project maintains good rapport with local florists and gardeners so that these people will not feel threatened by competition with their own businesses. In fact, local florists and agrdeners are occassionally asked to help with the greenhouse project by giving advise or demonstrations.

To establish the greenhouse, certain "extra" materials and equipment were needed, such as soil, fertilizers, pruning tools, knives for making cuttings, insecticides, wood-preservative paints, galvanizing paints, benches, and pots.

The original plan for the greenhouse came from a magazine given to the project by a greenhouse manager who had been recommended by the State and who had developed a good reputation working with high schools and community colleges to develop horticultural programs. The facility plan provided by this greenhouse manager has been originally used by an eastern university. The manager also occassionally supervised the two carpenters, recruited from the Federal employment program (PEP) alluded to earlier, to help construct the greenhouse. The school district maintenance supervisor ordered all the necessary materials for building the facility, such as gravel, benches, pots, trays, plants, seeds, simple laboratory equipment, fertilizers, plant food, a heating system, and a thermostat.

The project staff suggests that anyone adopting this type of plan always contact (as it did) the State Department of Education and Career Education Department and try to locate some individual, interested and knowledgeable about horticulture or agriculture, who can recommend a greenhouse designer. The staff also actively invites requests for its blueprint and project description, which includes a list of materials. Alaska, Nova Scotia, California, and other districts in the State of Washington have already requested and received these documents.

In terms of facility development, the staff has no special problems. Their advise to someone trying to do the same thing is to: (1) take into consideration, in budgeting, certain "unforeseen" items, such as drainage and gravel, small equipment, initial outlay of soil (this particular project went into debt over this item), fertilizer, and bench construction, and (relatedly), (2) enlist the assistance of an expert who is knowledgeable about the costs of constructing greenhouses.

The project staff feels that the greenhouse is a huge success. The local newspapers run many articles about it and advertise its plant sales. Many community people came to the last sale and bought plants. The program would be even better, in the sense of serving more children and different groups at sifferent times, if there were more adequate staffing and more space. Currently, only one teacher has primary responsibility for the greenhouse, and only 50 students participate: twenty-five especially interested 5th-6th graders participate all year, and an additional 25 students are involved, sporadically, as extra staff time becomes available. Classes are kept sufficiently small (about 10) to allow for adequate individual attention.

The local high school has just built its own greenhouse, and project staff hope eventually to establish a coordinated K-12 program.

Photo 1

Photo 2

Photo 3

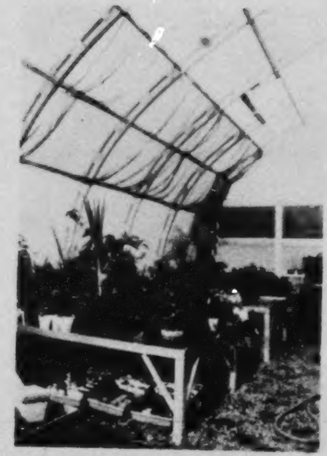


Photo 4

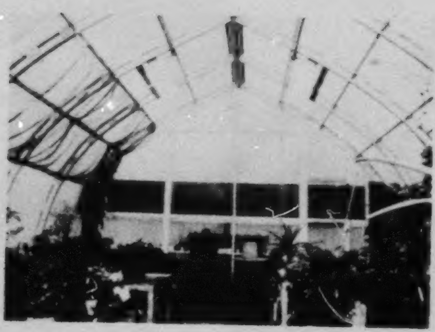


Photo 5

Photo 6

MASONRY TRADES PROGRAM

Overview

The Los Angeles Unified School District and the masonry industry combined resources to initiate masonry classes in secondary schools in the district and surrounding areas. The arrangement between education and labor is beneficial to both groups. Work skills and potential employment opportunities are provided for students, which helps to reduce the 35 percent drop-out rate prevalent in some sectors and provides the masonry industry with apprenticed bricklayers who will earn and hold their jobs.

The union is able to develop a superior pool of applicants. Students can explore their interest in masonry and the construction trade in this class without committing themselves to the three-year program leading to journeyman status. Students who complete the masonry class and want to continue are given preferential status for entry into the Preapprenticeship Training Program from which contractors draw apprentices. Those students that complete the high school program and go on to the Preapprenticeship Training Program will probably stay in the profession.

Description of Program

The program documented here is the masonry class at urban Venice High School in Los Angeles. A masonry industry initiated the concept for the high school classes. Representatives of the industry visit the campuses, bring an audiovisual presentation with brochures and a lecture on the benefits of the construction industry as well as on the negative aspects. The industry also provides classroom materials on the specific topics of bricklaying, tool identification, construction methods, and safety.

At the high school, the masonry class activities are centered around a regular school bungalow (Photo 1), which serves as the classroom for instruction, demonstrations, and display of materials. Because the school is located in an area subject to vandalism, all equipment is stored in the tool shed, wheels are removed from the cement mixer so it cannot be easily removed, and a former student works half-time to maintain and protect the tools.

An outside activity area within the large fenced area provides the space for building and tearing down practice walls. The students generate their own projects (Photo 2) and receive guidance from the teacher, a former mason. The first projects the students undertake help them to get the "feel" of the equipment and materials (Photo 3). Eventually, they work on more complex projects (Photo 4) involving the integration of various types of masonry units.

They also learn the art of placing mortar on vertical surfaces (Photo 5). The mortar they use is made of sand and lime but contains no cement (Photo 6). This mortar has the same consistency as mortar that contains cement, but it never "sets-up" and it can be reused many times. When the projects are taken down, the mortar is collected, sifted, and put back into the mixer along with more water, and "new" mortar is produced.

Those students who finish the course and decide to become masons are sent to the Mason Industry Training Center (Photos 7 and 8) in the City of Commerce, which is one branch of the Central City Occupational Center (a large vocational education facility in downtown Los Angeles). There, students learn brick, block, and stone masonry, marble setting, pointing, calking, and safety measures (Photos 9, 10 and 11), all skills required for journeyman status in the bricklayers union. Classroom training is combined with hands-on experience, using the tools, and materials of the masonry trade.

History of Facilities Development

In October 1974, the Brickmasons Apprenticeship Trust submitted a Title I proposal to Los Angeles County to have the Los Angeles Unified School District provide funds for a program of brickmasonry on the secondary level. The project was designed as a partnership with costs divided between the school district and the masonry industry. The masonry industry felt that school vocational programs and industrial training programs were too often incompatible; that is, students trained in school programs were not adequately trained for industry jobs. The industry and the Los Angeles County district personnel agreed that it would be more effective to have the industry work with the school in developing a program that would provide the training that would allow them to be placed in jobs upon graduation.

The program was developed that would give industry a role in selecting the equipment and tools and helping set up the activity, as well as working with instructors in developing the curriculum. The facility had to be one that allowed outside work with hand tools and equipment, with a lab area, adjacent classrooms, and sufficient space for the construction of long walls. In addition, it was a goal to establish the pilot program in a multiracial school so that all ethnic groups could be included. Venice High School was thus established as the pilot school because of its mix of Blacks, Chicanos, Anglos, and other races.

The Director of Apprenticeship at the local Mason Industry Training Center (supported by local unions and industry) worked with the school personnel in establishing the program. He recommended that a fence be constructed around the area to act as a barricade so that materials could be locked at night. A hose bib and power plug were installed. The cost of the pilot program was $3,000, including equipment, tools, materials, and maintenance.

The industry provided tool and equipment information, recommended purchases, placed equipment orders, and followed up on delivery and quality inspection. In addition, the industry provided all curriculum materials, including lesson plans, manuals, audiovisual materials, and all materials for hands-on experience. These materials included the various forms of brick and stone and the mortar. The industry maintains the stock of materials, and the school provides the space and the instructors.

Subsequent programs established at other schools, without purchase of equipment, have cost $1,500 to the masonry industry.

Photo 1

Photo 2

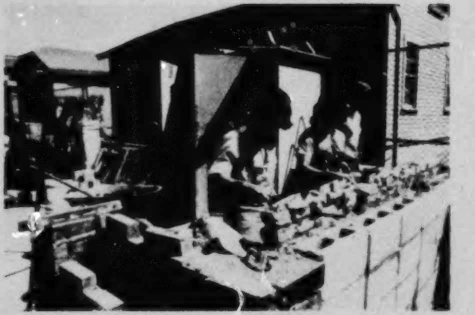


Photo 3

Photo 4

Photo 5

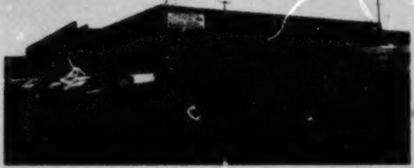


Photo 6

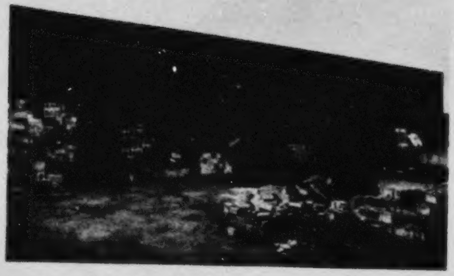


Photo 7

Photo 8

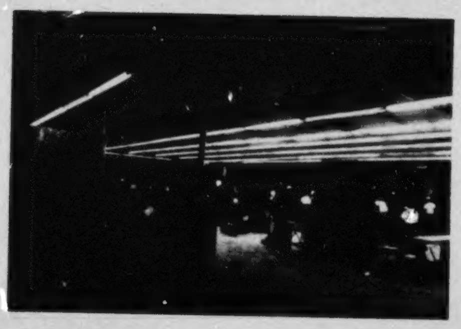


Photo 9

Photo 10

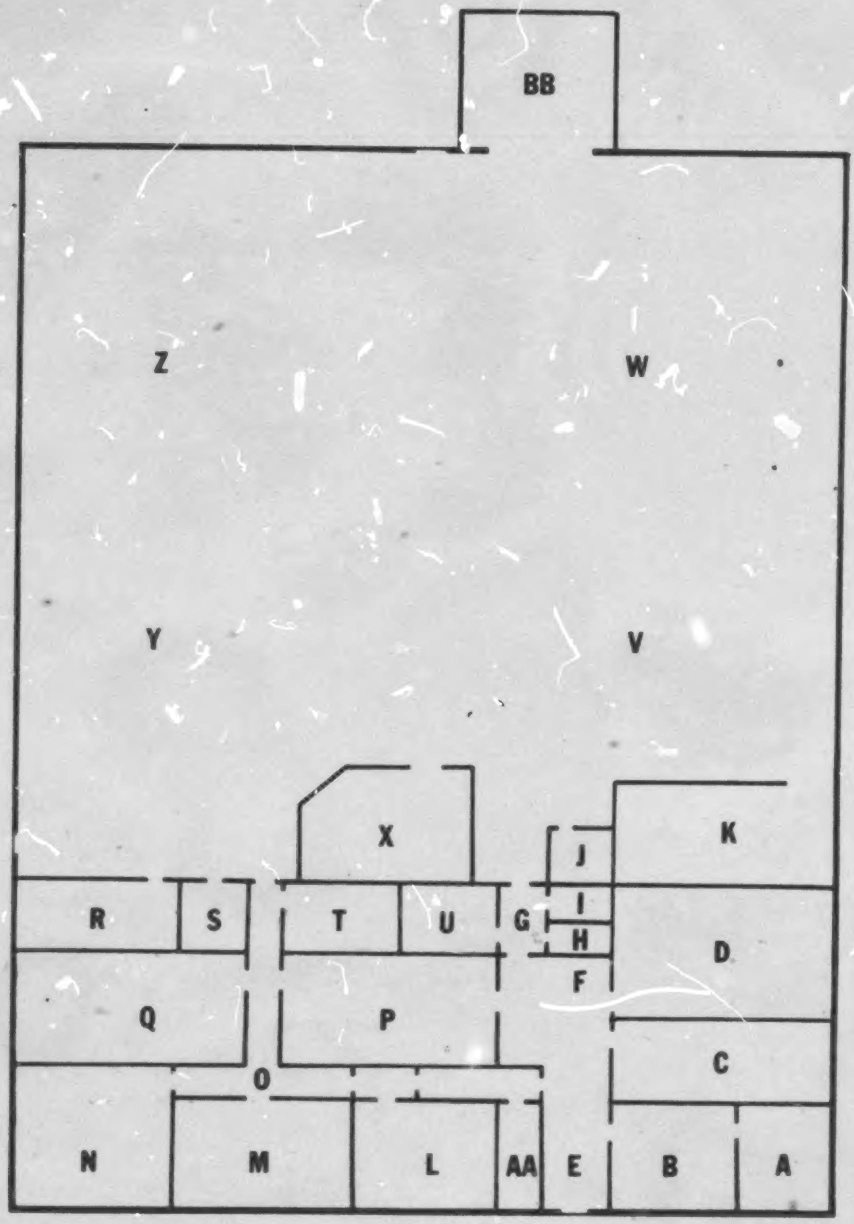
Photo 11

ACTIVITY AREAS OF THE MASON INDUSTRY

A	Director's Office
B	Executive Sec. Office
C	Conference & Workshop
D	Conference Room
E	Entry Way
F	Reception Area
G	Hallway

ACTIVITY AREAS OF THE UNIFIED SCHOOL DISTRICT

H	Men's Restroom
I	Women's Restroom
J	Instructor's Restroom
K	Student's Restroom
L	Classroom A
M	Classroom B
N	Classroom C
O	Hallway
P	Classroom D
Q	Classroom E
R	Instructors Office
S	Storeroom
T	Tool Room
U	Staff Lunchroom
V	Shop #1
W	Shop #2
X	Student Entry Way
Y	Shop #3 (Sub leased space)
Z	Shop #4
AA	Future Audio Visual Library
BB	Mortar Mixing Area


BB
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MOBILE OPEN CLASSROOM (MOBOC)

Overview

MOBOC (for Mobile Open Classroom) is a classroom on wheels; four vans carry 40 children in grades 4-8 into the city of Los Angeles to educate them in the traditional classroom subjects and in an awareness of the urban environment. Although it is a private school, it is a model that could be used by the public schools as well.

The objective is to give students first-hand knowledge of the urban world around them and thus integrate their knowledge of that world with actual experience. The experimental project was conceived as an alternative to present forms of schooling; the administrators of MOBOC feel that the traditional classroom situation provides inadequate preparation for the life beyond it, since it separates the child from the environment in which he will later try to find a place.

Program Description

MOBOC is a private school with an annual tuition of $1,500 per student. Its 40 students meet at a centrally located park in the morning to board the vans that are the primary "classrooms" (Photo 1). Ten children are assigned to each van, according to grade or ability level. One adult drives each van and is in charge of the students in that van (Photo 2). Once the children have boarded the vans, they travel to different areas of the city for the day's lesson. Since the vans circulate throughout the city, Los Angeles itself is the school's essential facility. It may be a library (Photos 3, 4, and 5), or it may be MOBOC's storefront facility that serves as the home base (Photos 6 and 7). Often, however, it will be one of the city parks, for physical education and lessons in ecology, or the small-claims court, the Los Angeles Police Department, a dairy, the mountains, the beach, a florist's shop, a bank, a computer facility, and so forth. Each visit is part of a lesson that was planned jointly by the teacher and students.

The curriculum is flexible, and sometimes a series of visits are made as parts of a unit of study that investigates a complete cycle or all aspects of a subject. For example, one class studied food production from farm to market, raising a garden at the home of one of the students, visiting a tuna-packing plant, and getting up at 4 a.m. to visit one of the two produce markets that serve the city.

The children benefit from having direct contact with architects, artists, assembly-line workers, filmmakers, businessmen, and others. The parents provide assistance by inviting the children to visit their places of work. They also donate furniture that is used in the storefront and hold garage sales to raise money. Community involvement is, of course, of critical importance to the success of the school, and cooperation is good. The children attend the regular tours for schools offered by such agencies as the water and power company, the telephone company, and local museums. Activity trips are usually scheduled with friends or acquaintances of someone in the school.

A basic premise of MOBOC is that many existing urban educational resources are underused, such as public libraries. So, for 6 or 7 hours a week, MOBOC children go to the public library, where they make out their math workbooks, write their weekly compositions, and read.

Because of their immersion in their environment, the children actually spend only about an hour a day on the bus, not much more time than some children spend travelling to and from conventional schools. And none of MOBOC's on-bus time is "dead" time. For example, one week the director taught children the slide rule and the class did time/rate/distance problems and figured gas mileage all over the city. The children learn mathematics, reading, and science in various ways: by having these subjects integrated into the visits, by using workbooks or aids provided by the State Department of Education, or by experimenting in the storefront facility. They once cooperated in creating three-dimensional structures, problem-solving engineering exercises that culminated in their building a freestanding tower 31 feet high. Based on standard achievement tests, the director has found that, on the average, students advanced one to two grade levels over a year and showed improvement even in areas not formally taught, such as spelling.

Special trips are occasionally planned. A 5-week trip through the 13 original colonies is planned as a MOBOC special activity in conjunction with the Bicentennial celebration. A group of nine students and two teachers will visit 169 villages on the New England Heritage Trail and many other cities. Students will study the contrasting natural environments, city and rural systems of living, and cultural centers as they exist now and as they existed in the past. The trip is part of a plan to expand the curriculum to include trips of greater distances and time.

History of Facilities Development

MOBOC was developed by a professor of architecture and urban planning. He first worked with colleagues to set up a nonprofit corporation called Open Space, devoted to studying school alternatives, and MOBOC was established as part of the corporation.

Rather than bringing the outside world into the school, the director wanted to reverse the process. A city like Los Angeles contains so many millions of people doing millions of different things that this seemed an ideal place to experiment in de-schooling by transporting the students into the community for their education. A mobile unit was selected for this, since public transportation in Los Angeles would not be as easy to use. The mobile school was considered to have three important conceptual features:

(1) A radically different allocation of school funds

(2) Maximal use of urban resources

(3) A total restructuring of the curriculum around direct-experience learning

Each of these features depends on mobility. Making the school primarily mobile allowed school funds to be redistributed to the students' and teachers' advantage. Administrative costs are minimal, and the budget can be more totally devoted to teaching or direct pupil costs. Mobility also allows wider use of the many public and private urban resources, with libraries as a prime example and parks, factories, professional offices, beaches, yacht harbors, stores, and many others a close second. Third, mobility allows the teacher to restructure the curriculum around direct-experience learning, bringing relevance and meaning to the subject matter. Children are allowed to see, touch, taste, hear, and smell life first-hand. The whole world becomes a learning laboratory. All of these factors mediated in the selection of the mobile unit as the key element of the program.

The director met with parents over the summer of 1971 to enroll a few children and test the idea. He and the school's first class of 7 children converted a windowless cargo van into a comfortable, flexible, safe environment. They added windows, seats, storage space, and a small table. During this time, the children worked on an architectural analysis of space requirements and learned about electrical wiring, the use of hand tools, heat transfer, and a host of other information as they did the work on the van.

One of the main reasons that the director had the students help modify the van was that he felt that they might have trouble identifying with "their" school, and, if they had a part in its development, this problem could be avoided. By the end of the first year, he found that school identity was not a problem, and decided that vans could be bought ready to go, with standard windows and seats. During the first year, the school was totally mobile without a home base.

The school grew in the second year to 24 students, three vans, and three teachers. This increase allowed students of similar ages and interests to be grouped together. It was at this time that the school began to feel a need for a permanent home base for large-group discussions of the whole school, long-range science experiments, and the development of other interest centers. In the third year of the school's operation there were 27 students, three vans, and three teachers. For $90 per month, the school rented the Richland Youth House, a facility put up by homeowners for children to use after school for Boy Scouts, Girl Scouts, etc. The facility contained two small rooms and one large room, a kitchen, and two baths. The major disadvantage with this arrangement was that because they had to share the space with others, who would use it after school, everything had to be cleaned up and put away before they left. This made it especially hard to set up interest centers.

In its fourth year, the school had 40 students, four teachers, and four vans. It also rented a storefront for $260 per month that serves as a home base. The students spend about 25 percent of their time at the storefront, which houses the following activities:

(1) An area for art work

(2) A center for mathematics, geography, and reading

(3) Space for office activities that can act as a public reception area

(4) An open area that accommodates 40 students in group meetings

(5) Space that can be converted into a darkroom

(6) A science laboratory area with sinks, counters, etc.

This is a generally convenient location from which to travel to planned activities.

The storefront was subject to the usual city building code requirements, including fire inspection, building inspection, health clearance, and zoning checks. Because the students are not there full time, their occupancy was classified by the Santa Monica Building Department as "Special Vocational," and there were only a few code requirements that called for modifications of the facility. One of these was to make all exterior doors open outward; another was the installation of a fire-alarm system. To solve the requirements of a drinking fountain, a commerical water bottling company is delivering water that is dispensed in a cooler. The last requirement was that, while anyone is in the facility, all exterior doors must remain unlocked. The interior incorporated interest centers for on-going activities (see floor plan and key). Modifying the facility has been a gradual process. Teachers and other volunteers have worked on weekends building a partition, painting, and laying 4-by-8-foot sheets of Masonite on the floor in the art area. A large department store sold them some used cabinets at quite a saving, and other furniture, such as a card table and chairs, were donated by parents. The storefront is still developing and will continue to do so as long as the school is experimenting with its needs and future plans.

The director has been observing different aspects of MOBOC since its initial operation. He concludes that the school is, indeed, successful. Experience showed that the initial group of seven students was too small and was spread across too wide an age range, so that the size of the school was gradually expanded. He found that he needed some administrative support, and replaced himself as instructor so that he could attend exclusively to the administrative matters. The director also felt that some kinds of permanent facilities were needed for art projects, group discussions, and administrative activities, and thus the storefront was rented. He believes that the ideal size of the school should probably be about 50-60 students. At that size, five or six teachers would still be a small enough group for productive meetings. The mobile school is not perfect, but it is a start; it offers an inexpensive and effective alternative to conventional education and is a symbol of future trends in education.

Photo 1

Photo 2

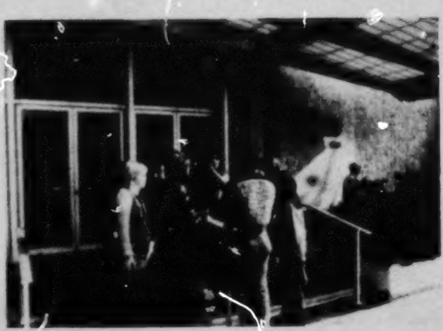


Photo 3

Photo 4

Photo 5

Photo 6

Photo 7

FLOOR PLAN KEY

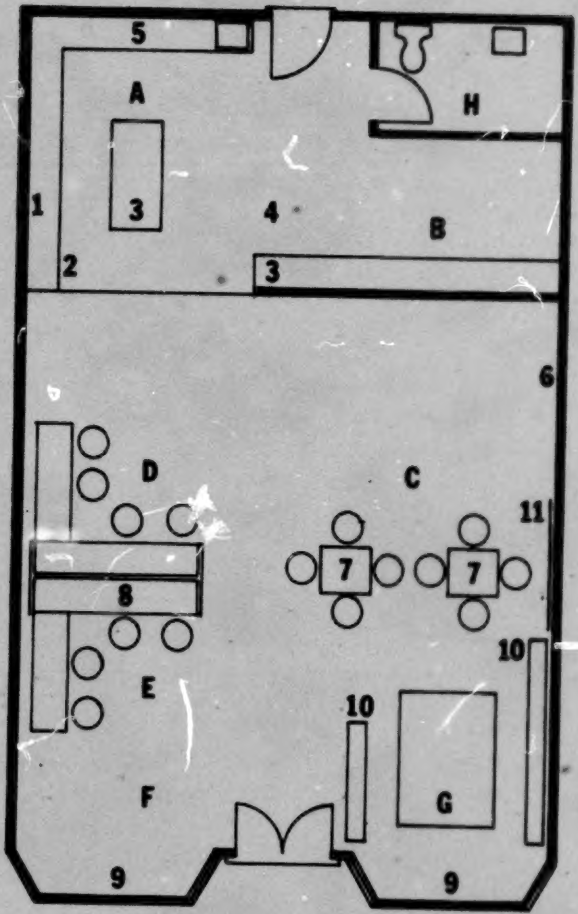
MOBOC

ACTIVITY AREAS

A	ART
B	SCIENCE LAB
C	URBAN STUDIES
D	MATH
E	SCIENCE
F	BIOLOGY
G	READING NOOK
H	TOILET

EQUIPMENT/SPECIAL FEATURES

1	TACK BOARD ON WALL
2	CABINETS BELOW COUNTER
3	WORK BENCH/MASONITE PEGBOARD ABOVE
4	MASONITE FLOOR
5	KID'S MURAL
6	MAP OF LOS ANGELES
7	CARD TABLES FOR GAMES/READING
8	FREESTANDING MOVABLE WORK CENTERS/STORAGE CABINET
9	SHELVES FOR PLANTS
10	SHELVES
11	1' HIGH CARPETED STAGE ON CASTERS
12	MOVIE SCREEN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OCCUPATIONAL SKILLS CENTER

Overview

The Occupational Skills Center, developed by the Federal Way, Highline, and South Central School Districts, is the first interdistrict vocational education school in Washington State. The program serves approximately 500 high school juniors and seniors, with a projected enrollment of 1,000 by 1980. The objective of the program is to provide vocational training in those areas that display substantial job potential for graduating high school students.

Program Description

To fulfill the objectives of the program, the following activities have been undertaken:

(1) Community leaders from organized labor, government, industry, and business were recruited to be active members of advisory committees.

(2) Instructors were chosen who have job experience in the areas that they teach, and who have empathy with young people.

(3) The curriculum is designed to stress current technology and skills meeting job market needs.

(4) The staff helps graduates make decisions regarding further schooling and work.

(5) The school staff follows the progress of each graduate, and considers his/her success a measure of program success.

High school students attend the Occupational Skills Center half of each school day during their junior and/or senior years (Photo 1), spending the other half day at their own high schools. It is felt that this cooperative approach allows for vocational training of greater variety and depth than would otherwise be possible; in addition, it reduces the expense of maintaining separate facilities in the various districts.

Some of the present programs include: dental assisting (Photo 2), medical assisting (Photo 3), office worker (Photo 4), visual communications (Photos 5, 6, and 7), commercial foods (Photos 8 and 9), and clothing (Photos 10 and 11).

Marine technology is studied in a separate facility located on the shores of Puget Sound about 6 miles from the Skills Center (Photo 12).

In this facility, students participate in activities that prepare them for work in a wide variety of marine occupations. One of these is hatchery management. Eggs are taken from salmon that migrate to a stream adjacent to the lab. The eggs are incubated (Photo 13) and raised to fingerling size in the ground level of the building (Photo 15). The young salmon are then returned to the stream. Students also learn to analyze the chemistry of water (Photo 14).

The two-story facility also includes storage for boats, nets and raingear on the lower level (Photo 16). The upper level includes a dry lab for classrooms, navigator training, and a reference library.

History of Facilities Development

The program was developed to provide skills in occupations that the staff felt: (1) would be of high interest to the students, (2) fit the potential job market in the local area, and (3) represented jobs for which students could be hired immediately upon graduation, rather than later. The program was originally conducted in an old abandoned school that had been condemned twice; it was clear that the program should be located in safer quarters.

The director of the program gathered ideas about skills centers by visiting several in the West Coast area, including programs in San Jose and Las Vegas. He and his staff then looked for possible locations of the programs, including old grocery stores and warehouses. They felt, following their review, that the facility should be esthetically pleasing, so that students would look forward to their visits to the center. It was also important that it be centrally located to the three districts that it would serve.

The districts decided to hire an architect and build a new facility. The Highline District owned some land that was not in use, and this was chosen as the site. The architect was selected by the school district; the director and his staff worked directly with the architect to express their needs regarding the kind of facility that would best serve the students. This open communication was very important to the success of the development of the facility.

In fact, two separate facilities were built simultaneously: the main Occupational Skills Center and the Marine Technology Center, a few miles away. Flexibility was built into the main building, and some of the rooms have since been modified. For example, one area had water, air, and electricity "stubbed in," and the room has since been developed into an operational area for group activities. Another room was modified by a change of walls and doors. The staff feels that this built-in flexibility is important for changes that are likely to occur.

The facilities had approval from a number of agencies. The Fire Department approved the installation of explosive-proof fixtures to be used in the plastic shop; safety and health authorities made their inspections; and environmental agencies, engineers, and others were consulted for approval of the marine facility.

The two facilities occupy a total of 41,000 square feet; 36,000 feet at the main skills center, and 5,000 feet at the Marine Technology facility. The total cost was a little over $1 million. The director now feels that a somewhat larger facility should have been built, to allow for greater expansion of the program. It is hoped that other programs, such as mechanics, drafting, and electrical engineering will soon be established at the Center.

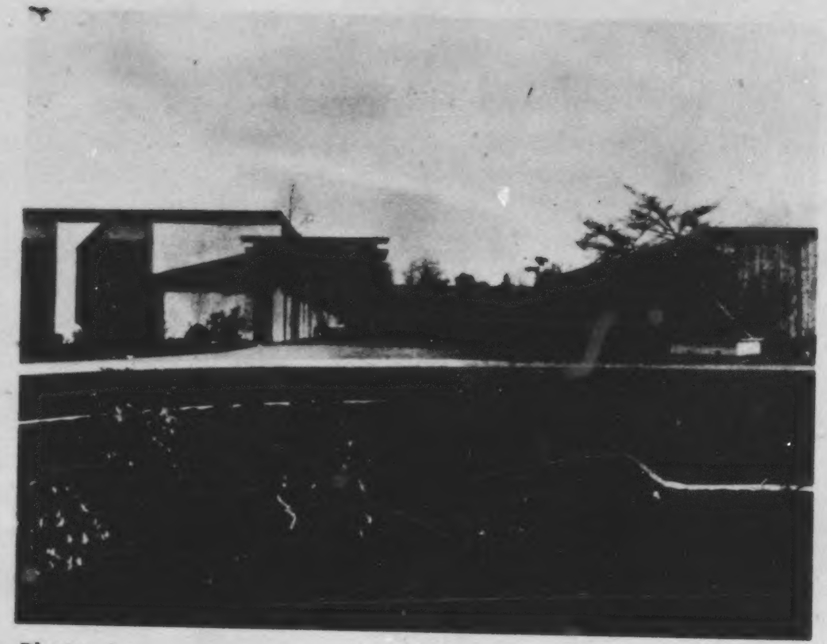

Photo 1

Photo 2

Photo 3

PURR
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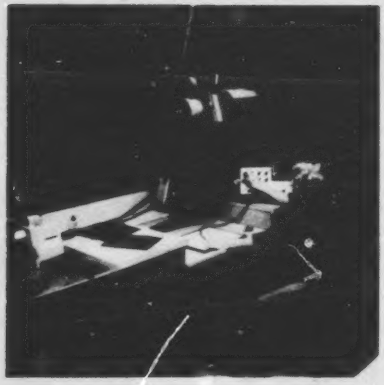
LETTERS

Photo 4

Photo 5



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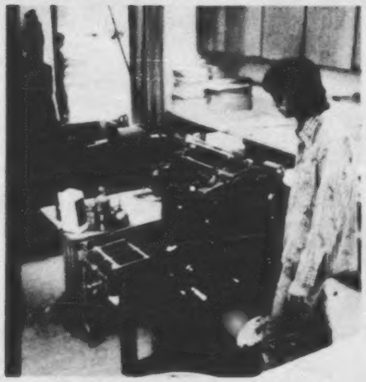

Photo 7

Photo 8

Photo 9

Photo 10

Photo 11

FLOOR PLAN KEY

OCCUPATIONAL SKILLS CENTER

ACTIVITY AREAS

A	VISUAL COMMUNICATIONS
B	MEDIA CENTER
C	OFFICE MACHINES/TYPING CENTER
D	DENTAL TECHNOLOGY LAB
E	MEDICAL ASSISTANT (CLERICAL)
F	SEWING
G	DINING ROOM
H	KITCHEN
I	METAL SHOP
J	HYDRAULIC SHOP
K	PLASTICS SHOP
L	CLASSROOM
M	LAWN
N	STAFF CONFERENCE
O	OFFICE
P	COMMUNICATIONS SKILLS AREA
Q	STORAGE
R	STORAGE
S	MECHANICAL
CAM	CAREER ALTERNATIVES MODEL LAB

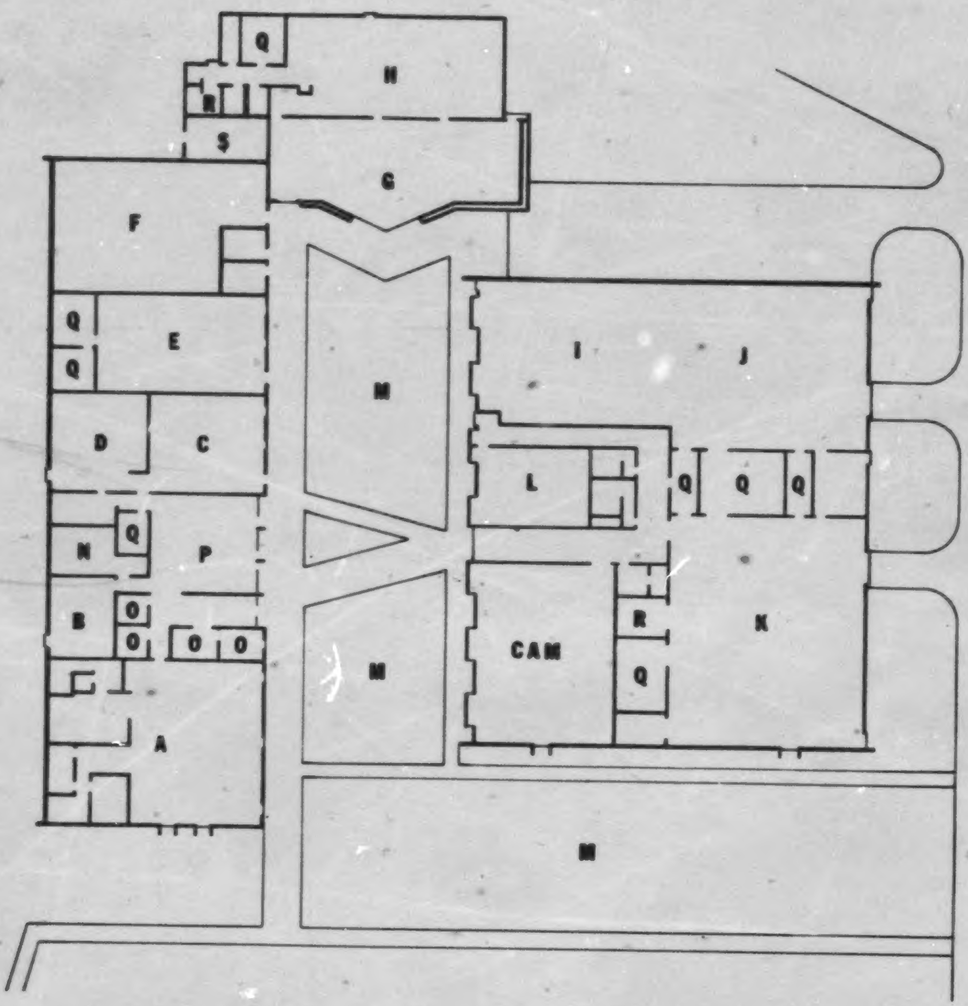
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Photo 12

Photo 13

Photo 14

Photo 15

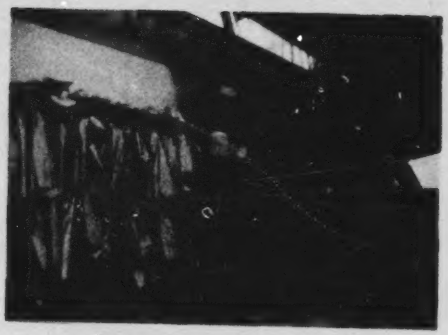


Photo 16

FLOOR PLAN KEY

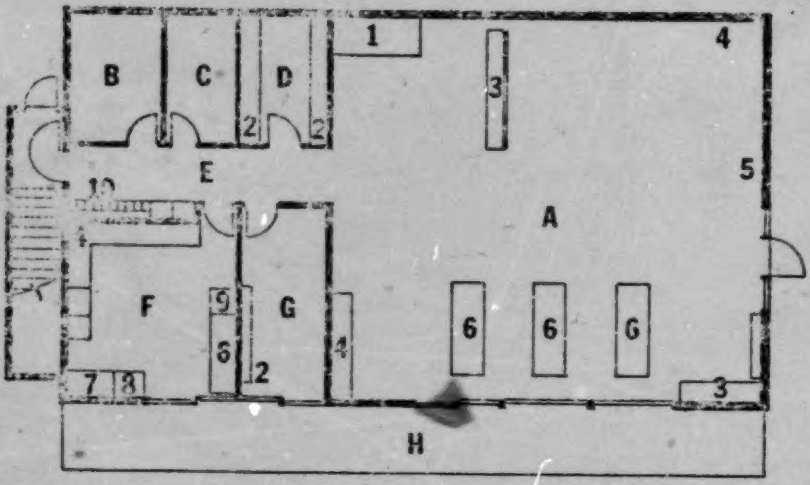
MARINE TECHNOLOGY LABORATORY

ACTIVITY AREAS

A	DRY LAB
B	WOMEN'S TOILET
C	MEN'S TOILET
D	STORAGE
E	HALL
F	PREPARATION ROOM
G	LIBRARY & OFFICE
H	OBSERVATION DECK
I	WET LAB
J	BENCH
K	AQUARIA PLATFORM
L	PUMPS/MECH./ELECT.
M	STORAGE
N	WOMEN'S DRESSING
O	MEN'S DRESSING

EQUIPMENT/SPECIAL FEATURES

1	SHELVES
2	CHART ROOM
3	COUNTER
4	COUNTER W/SINK
5	WALL CHALKBOARD
6	TABLE
7	FREEZER
8	REFRIGERATOR
9	RANGE
10	AUXILIARY POWER UNIT
11	STORAGE
12	LATHE
13	BENCH
14	DRILL PRESS
15	GRINDER
16	LAUNDRY TRAYS
17	SHOWERS
18	VIEWING WINDOWS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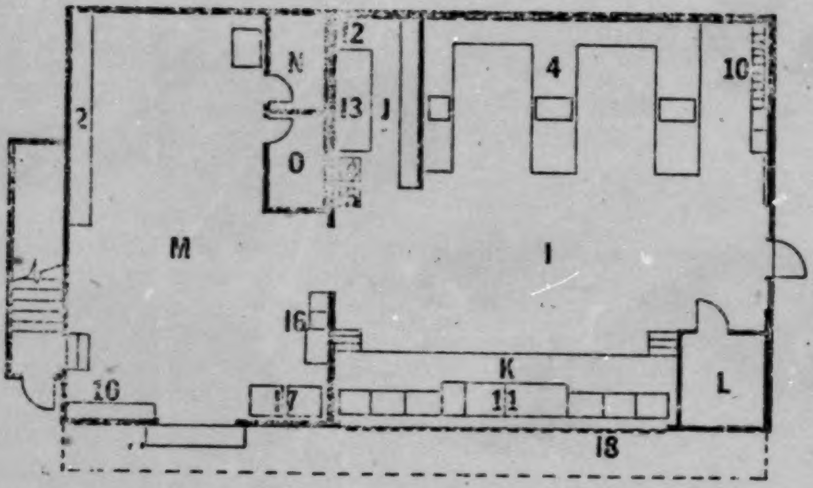
UPPER LEVEL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GROUND LEVEL

OCCUPATIONAL VERSATILITY

Overview

Occupational Versatility is designed to provide a highly personalized industrial arts program to its students, encouraging them to work independently, progress at their own rate, and become self-sufficient. The program's overall objective is to concentrate on students as individuals, including their specific problems and needs; in the process, more effective teaching methods and more effective learning environments for the industrial arts are developed. The program serves more than 17,000 students in grades 6-9 in the Washington State area. The Chinook Project itself involves three teachers who train approximately 700 students a year, with each session including about 90 students. Although the original Occupational Versatility pilot schools were located exclusively in the Seattle suburbs, many rural schools in Washington and other States are now included in the project. The program is about to be tested in a large urban center--Washington, D.C. This particular program description concentrates on one junior-high-school project in Chinook, a suburb of Seattle. However, project staff feel that the program can be applied to any type of school district in the country, irrespective of population density or SES characteristics.

Program Description

The program's emphasis is on personalized instruction, individualism, and self-sufficiency--putting the student, including his needs and problems, first, rather than expedient scheduling or faculty convenience.

The program is presently operating in 67 junior high schools in 21 States, and its model is continuing to be adopted by many other school districts in various parts of the country.

Students decide on their own projects, set their own goals, and work toward them at their own pace. In other words, students manage their shop activities on an individual basis, and each is responsible for planning his or her own work and time, for recording the purchase of materials, and for seeking whatever help he or she needs to complete a project.

Classes are heterogeneous, composed of boys and girls from different grade levels. Two or three instructors form a teaching team to supervise student activities. Students have access to a variety of information resources, in addition to instructors and more experienced peers. Cassette tapes, filmstrips, charts, and instruction sheets are also available. Students are encouraged to work together in teams wherever individual project goals coincide; they may even establish assembly lines for small-scale "mass" production.

Facilities provide opportunities for work in areas which include, but are not limited to, wood, plastic, power, electronics, sheetmetal, forge and foundry, welding, graphics, masonry, glass, and tile.

When students arrive in the workroom, they pick up their notebooks to map out individual projects. After each period begins, the office clerk takes attendance by recording those students whose notebooks haven't been picked up as absentees. Cylinders are installed above the notebook storage area for storing safety glasses (Photo 1).

Career information centers provide numbered occupational titles (mounted on plywood) that guide students to information about certain occupations (Photos 2 and 3). When the students are working on a project, they review 8mm film tapes that explain exactly how to use the equipment they will need (Photo 4). After students have had their projects approved, they are free to use any piece of equipment if they check it out according to established procedures (Photo 5).

At each of the three pilot schools for the program (Keithy Junior High, in the Franklin Pierce School District; Chinook Junior High, in the Highline District; and McKnight Middle School, in the Renton School District) the shop area is housed in one large facility. Connecting walls that originally separated different shops, such as wood, metal, and electrical shops, have been removed. All power tools are centrally located.

History of Facilities Development

At the outset of the project, the major concern was to improve industrial arts programs at the junior-high-school level by making them personalized--more relevant, efficient, and individualized for students, with students' interests the clear focal point of the program, not teachers or scheduling. It was also hoped to reduce the burden on teachers through media aids and, in general, to increase program flexibility, the possibility of teaching many different skills in one location, and the capability of providing special equipment for different skills. Student management of projects and self-instruction were also considered important program objectives.

In summary, there were four major program requirements influencing the facility design: (1) that students be able to move safely throughout the facility as required by their work, and as quickly as possible; (2) that all required tools, equipment, and materials be easily accessible to all students; (3) that instructional media, material supplies, and project storage be accessible to students in the areas in which they work; and (4) that students' work stations be fully equipped for the activities in which they are participating.

To respond to these programmatic needs, it was decided to consolidate the separate unit shops for different areas (e.g., wood, metal, etc.) into one large, single shop. This approach was adopted because the only other usable option--construction of a new building--would have been prohibitively expensive. The consolidation approach allowed every student to be exposed to options of studying a wide range of industrial arts and materials and thus to have his individual needs met. This combination of shop facilities into one large building also had the effect of minimizing floor space; only 70 square feet of floor space per student was necessary under this system, compared with 100 square feet per student recommended for "typical" industrial arts facilities.

In brief, less space was required in the consolidated plan and, although there was considerable expense involved in the facility's installation, operational costs were about equal to a facility model which keeps each shop area separate. Most important was the fact that the unified facility met the program's basic objectives outlined above.

Federal funding for the project began in 1969 under Title III of the ESEA and included one year for planning, two years for pilot school implementation (1970-1972), and two years for dissemination (1972-1974). The initial funding proposal was written by veteran shop teacher and project director John Lavender, with the assistance of the Seattle-based Metropolitan Area Industrial Arts Consultants--a group which provides assistance to 46 school districts in the State of Washington. The proposal for Occupational Versatility was originally approved by the school board. The project's annual budget is now part of the regular school budget and requires no yearly proposal renewals.

The project budget has always been broken down by three major categories: remodeling, casework, and salaries. However, it is meaningless, according to the staff, to cite specific figures for annual operating budgets. For example, the project in Chinook operates at $6,000 to $7,000 a year, but 80% of this represents material resold to the students (e.g., a student pays for the table he makes) and, at any rate, operating costs vary from shop to shop.

To implement the facility, certain new equipment and materials were needed and purchased, such as self-instructional material, films, tapes, and student-managed learning manuals.

With respect to actual remodeling, the facility was designed by teachers, with no professional architectural assistance. Their design was then implemented during one summer by the school district's maintenance department; this mainly involved knocking down walls and putting up panels and partitions.

At Chinook Junior High School, the existing wood and metal shops were combined and the total area expanded from 40 by 130 feet to 50 by 130 feet to create one large, general shop. Initial remodeling costs were about $15,000. Although some schools that have installed the Occupational Versatility program have been able to use their existing shop areas, it should be pointed out that others may require more extensive remodeling efforts to adapt their space to program requirements. Project staff advise anyone considering a similar facility to pay special attention to planning for and obtaining cost information about installation costs.

The project staff also voluntarily installed extra electric outlets and soundproofing to enhance the program. They were, however, constrained by new Occupational Safety and Health Act (OSHA) standards to install certain safety devices and upgrade the ventilation system for the forge and foundry equipment area. Such upgrading would probably be required in most older-type facilities.

With one exception, virtually no problems were encountered in implementing the Occupational Versatility facility (although programming problems did, and do, continue to exist). The one unexpected problem resulted from placing construction materials for operating power equipment too close to the equipment, itself; the machines were then clogged and impaired by saw dust.

In a broader perspective, the project staff offers potential implementors of this type of facility three major suggestions (aside from the careful planning of installation costs mentioned above):

1. Identify and plan the program in detail before planning the facility. Programs dictate facilities--not the other way around.

2. The facility is a place where students learn--not where teachers manage. The climate should be set for the student. For example, material storage space should be open, although this may not be most convenient to teachers.

3. The facility should contain as much flexibility as possible in its modeling. Training needs change with the times and, accordingly, units should be planned to allow for easy modification, elimination, and addition.

Professional evaluators from Seattle and Tacoma have concluded in their reports that the Occupational Versatility project reaches and often exceeds its established goals. Other indications of the project's success are staff enthusiasm and the enthusiasm and interest expressed by the community. For example, one night a week, teachers open the general shop exclusively to parents, to work on individual projects. The recently developed high-school self-instructional shop program will include additional forms of community involvement. The teachers' own enthusiasm is indicated by their heavy attendance at in-service classes held through the Department of Continuing Studies at Western Washington State College.

That the Occupational Versatility project is considered one of the most widely accepted Title III projects is suggested by the large number of other school districts throughout the country which have copied it or are in the process of copying it.

Moreover, project staff point out that the program costs no more to operate than other industrial arts programs. It is considered 30% more efficient in the number of students which can be accommodated, because of the relatively small square footage required per student compared with "typical" industrial arts programs (described above). The project administration actively seeks to help other school districts to plan similar facilities and encourages them to contact the project for advice.

The project is adding the area of home economics to its program as a result of some teachers' expressing interest in establishing the module.

An elementary school "lead-in" and high school "follow-up" program are also being planned so that the Occupational Versatility project will be comprehensive in its inclusion of students in grades K-12. These plans are expected to receive quick approval by the school board.

A major new program emphasis is on program dissemination. As mentioned earlier, the project is now operating all over the United States and K-6 and 10-12 components have been implemented. Dissemination and packaging of the entire Occupational Versatility program, including the facility plan, are being carried out primarily by a commercial firm in Santa Clara, California.

Photo 1

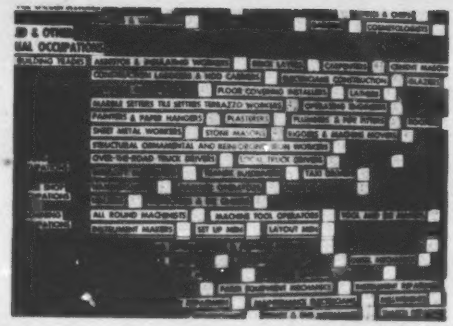

COSMETOLOGISTS
BUILDING TRADES
ASBESTOS & INSULATING WORKERS
BRICK LAYERS
CARPENTERS
CONSTRUCTION LABORERS & HOD CARRIERS
ELECTRICIANS CONSTRUCTION
FLOOR COVERING INSTALLERS
LATHERS
MARBLE SETTERS TILE SETTERS TERRAZZO WORKERS
OPERATING ENGINEERS
PAINTERS & PAPER HANGERS
PLASTERERS
PLUMBERS & PIPE FITTERS
SHEET METAL WORKERS
STONE MASONS
RIGGERS & MACHINE MOVERS
STRUCTURAL ORNAMENTAL AND REINFORCING IRON WORKERS
OVER-THE-ROAD TRUCK DRIVERS
LOCAL TRUCK DRIVERS
ALL ROUND MACHINISTS
MACHINE TOOL OPERATORS
INSTRUMENT MAKERS
SET UP MEN
LAYOUT MEN

Photo 2

Photo 3

Photo 4

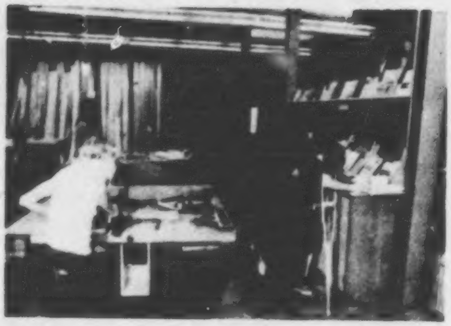


Photo 5

FLOOR PLAN KEY

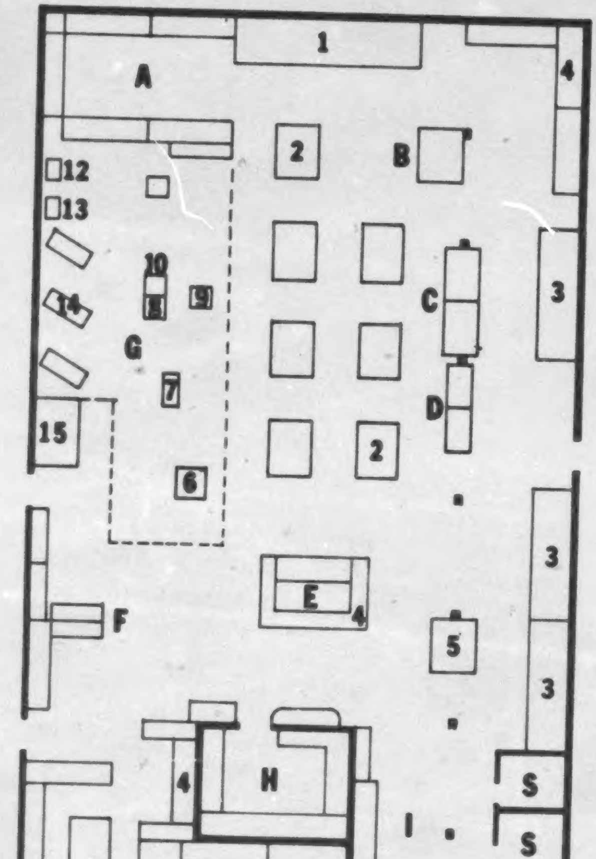
OCCUPATIONAL VERSATILITY
CHINOOK JUNIOR HIGH SCHOOL

ACTIVITY AREAS

A	PLASTICS
B	WOODS
C	PLANNING
D	RECORDS
E	PLANNING
F	GENERAL INDUSTRY
G	FINISHING
H	GUIDANCE
I	ELECTRICITY
J	POWER MECHANICS
K	WELDING
L	POWER TOOLS
M	METALS
N	PLANNING/DRAFTING
O	GRAPHICS
P	METAL STORAGE
Q	FOUNDARY
R	OFFICE

EQUIPMENT/SPECIAL FEATURES

1	LUMBER STORAGE
2	WORK BENCHES
3	PROJECT STORAGE
4	MEDIA CENTBR
5	GLUE AREA
6	CIRCULAR SAW
7	JOINER
8	DRILL PRESS
9	SCROLL SAW
10	BELT SANDER
11	BAND SAW
12	BUFFER
13	GRINDER
14	WOOD LATHES
15	PLYWOOD STORAGE
16	MACHINE LATHE
17	DRILL PRESS
18	GRINDERS
19	BUFFER
20	BENDER
21	SHEARS
22	ROLLS
23	BRAKE
24	SCROLL SAW
25	METAL STORAGE
26	SINK
27	FORGE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ORANGE COUNTY

Overview

The Orange County, Florida Career Development Program has been developing a K-14 comprehensive educational program focusing on career opportunities; its goal is to help expand career education into every school in Orange County by offering a model curriculum that has been tested and revised in the field. In addition, the long-term objective of Orange County's Comprehensive Educational Plan is "to provide leadership for the expansion of career education to all Orange County Schools." This requires the development of a transportation model at each educational level, including curriculum, inservice, staff development, guidance services, placement, and follow-up and evaluation. Orange County's model has solidified to the stage where the project has changed priorities from planning, with some implementation, to one of major implementation, with complementary planning and redesigning based continuous evaluation feedback.

Program Description

The Orange County Career Development Program has been implemented in schools within the district by means of inservice workshops conducted by project and school staff members. Workshops include an overview of the philosophy of career education, an introduction to curriculum materials, demonstrations, and individual planning sessions. As soon as the program has been implemented within a school, the school staff assumes responsibility for maintaining it. In the meantime, Orange County Career Development personnel and/or occupational specialists work with in-school personnel, such as the previously designated resource teacher (who receives an income supplement), an elementary guidance counselor, and media specialists, to implement and maintain career education in the respective schools.

The Orange County career educational model has seven distinct but interrelated components, which are described below.

1. Elementary-Level Curriculum. The K-6 career education curriculum model is designed to provide the teacher with assistance in continuously relating career development concepts and elements with existing academic objectives. Materials are based on 15 occupational clusters.*

2. Secondary Curriculum. At the secondary level, primary emphasis is given to the development of a curriculum vehicle that will give the secondary teacher sufficient materials with which to work, at the same time retaining enough flexibility to allow for individual teaching approaches. A basic curriculum was evolved through field testing and was developed by writing teams composed of classroom teachers. The basic format includes a teacher-oriented occupational information package focusing on career elements and the 15 occupational clusters, suggested career-related activities and study sheets for each major academic area, and related learning activity packages (student-oriented) corresponding to the career field under study.

3. Post-Secondary Curriculum. The development of an individualized job-entry-based vocational curriculum has been initiated at Mid-Florida Technical Institute and at the Adult High School.

4. Guidance and Occupational Specialists. The guidance component of the Orange County Career Development Program encompasses classroom activities initiated through the utilization of career education materials as well as a number of supportive techniques: a guidance program, career clubs, workshops, etc.

The particular facility documented here is the Resource Center at Lake Weston Elementary School (Photo 1). It is centrally located in a courtyard near the media center and cafeteria. The occupational specialist has found and collected many types of hands-on materials that the students can use for career education projects; for example, woodworking tools, portable ovens, an ice-cream maker, and audio-visual equipment (Photo 2).

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* The 15 occupational clusters are Agri-Business, Consumer and Homemaking, Marine Science, Personnel Services, Public Services, Business and Office, Communications and Mass Media, Health, Manufacturing, Transportation, Cosmetology, Environment, Fine Arts and Humanities, Hospitality and Recreation, and Market and Distribution.

A special feature is the wall panels that open down to form workbenches for students outside (Photo 3). This also provides better visibility for supervision. The occupational specialist helps the teachers to organize career education projects such as class trips to real sites or has members of the community come to the school to talk about their work. Here (Photo 4), members of the Police Department drive a squad car up to the classroom door, and the officers describe the equipment in the car and explain their work. Some projects are moved outside the classroom for more space and greater flexibility (Photo 5).

The boys shown in Photo 6 have taken on an ambitious project. They have learned to read an architect's blueprints and are building a scale model of a house out of balsa wood. The architect visits the class from time to time to consult with them. In this first-grade class (Photo 7), the teacher integrates career-related material in all areas of instruction. The class discusses the Post Office, and this is followed by an art project (Photo 8) in which each child draws a picture of how he would look as a postman.

When the class investigated the career of fireman (Photo 9), they took a trip to a fire department and recorded the event in photographs that were made into a display. They also made a cardboard fire house and learned some words that are used by firemen, such as fire extinguisher and fire hydrant.

History of Facilities Development

When the concepts of career education began to become a part of Lake Weston Elementary School, many parents came to the school to ask questions about the program and then to find out how they might become involved. The guidance and occupational specialist for the school met with the parents and worked with them. She also worked with the teachers to plan and develop career-related activities: setting up activities, arranging transportation, organizing tours, or finding materials such as lumber, cardboard, plastic, etc. Over a period of time, a great deal of material was collected, plus audio-visual equipment, woodworking tools and equipment, and a portable oven. The parents felt that a Career Learning Center would be useful so that the specialist could keep track of all of the material and equipment.

Plans for the center were sketched by the guidance specialist and the principal. Their design was influenced by the desire to incorporate the area around the center as an outdoor learning center. This led to the development of two wall panels that would drop down and form outside workbenches (see Photos 2 and 3).

The parents donated all but $400 worth of materials; the $400 was paid by the county. Students from a carpentry class at Wymore Technical High School supplied the labor. While the center was being constructed, the parents, realizing that the center would be subject to vandalism, erected a high cyclone fence to block off the area when the school was vacant.

Plans were submitted to the Orange County Board of Education and were accepted without difficulty.

The Career Learning Center has been in use for one year, and its success is beginning to interest other parent groups at other schools in developing a center of their own. Equally important, it has served as a hub of activity for Lake Weston Elementary School, providing teachers with an extra facility that they can use and providing Orange County with a site for visitors who can see a model career education center in action.

Photo 1

Photo 2

Photo 3

Photo 4

Photo 5

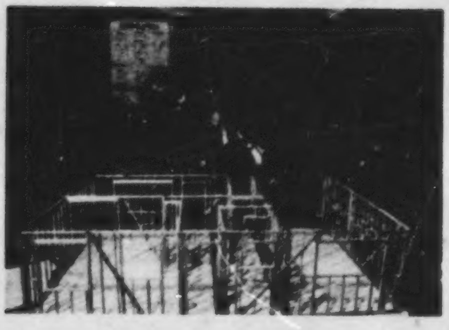


Photo 6

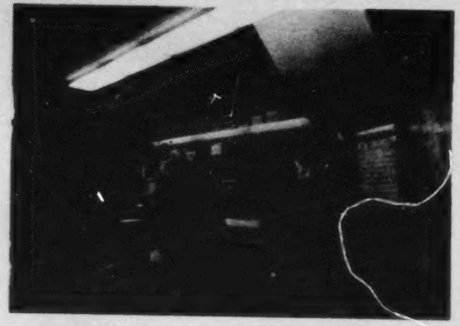


Photo 7

Photo 8

Photo 9

PACE

Overview

The Programmed Activities for Career Exploration (PACE) Center is a companion to the BOP, Inc., program and is also located in Bingham County, Idaho. Operating in a mobile unit, PACE is a quite different program from BOP. It is a program designed to provide high school sophomores with the most up-to-date occupational, educational, and career information available. In addition to the program designed specifically for tenth graders, who are the main audience for the program, open sessions are scheduled for eleventh and twelfth graders. The purpose of the program is to assist students in selecting a career that is compatible with their interests, aptitudes, and personal goals.

Description of the Program

The PACE Center is a mobile unit that travels among five rural high schools, where each sophomore is given the opportunity to complete a day-long program in career guidance (Photos 1 and 2).

The PACE Center is staffed by a Career Aide who works under the direction of a Guidance Coordinator who, as vocational counselor for the project, works in association with counselors at the various schools visited.

The tenth-graders are introduced to the PACE program in an orientation session, during which the materials are described and located for later reference. Next, a filmstrip entitled "Choosing Your Career" is shown, followed by a second filmstrip explaining the Kuder General Interest Survey. Packets containing the survey and other materials are distributed to the students. After completing the short analysis of their education, interests, work experience, and leisure activities, the students score their own surveys and profile the results.

With the help of the counselor, individual students interpret the profiles and begin matching their skills and interests with the appropriate occupations and are then free to consult the media materials relevant to the jobs they are interested in (Photo 3).

The center has an extensive library of sound/film strips and printed materials on careers. Students also explore the possibilities of post secondary education--business schools, vocational-technical schools, colleges or universities. Near the end of the school day, if time permits, the students may meet again in small groups to discuss the day's activities. Finally, each student completes a follow-through data sheet, which remains on file in the counselor's office for future reference (Photos 4, 5, and 6).

The PACE Center is a 12' x 45' mobile trailer that was made by Manorwood Mobile Home Builders in Caldwell, Idaho. A counter, 29" high, is attached to sidewall studs with support legs at 6' intervals. The mobile unit houses a variety of audio-visual equipment in addition to printed materials. In order to afford all students an opportunity to use the materials, the center limits groups to 13 students at a time (see floor plan and key).

History of Facilities Development

The program was designed by a committee of representatives from each of the five districts served. Before beginning the planning, they visited resource centers in Utah, California, and Arizona. They also studied program models at the Center for Vocational and Technical Education at Ohio State University and the Comprehensive Career Education Program in the Los Angeles City Schools.

The initial intention of the committee was to put a Career Education Media Center in each of the five high schools, but only one school had any space where a center would fit. During this time the committee was also working on the development of the BOP program and had arrived at the solution of using a mobile unit that would serve all five high schools. They felt that a mobile unit could also serve as a Media Center.

Simple plans were submitted to three mobile home builders for bids. Manorwood Mobil Home Builders in Caldwell, Idaho submitted a bid of $8,500 for each unit and the bid was accepted by the committee. The mobile unit shell was purchased for $8,500 with County money, and a grant of $3,000 for equipping the center with audio-visual materials was funded under Part D of the Vocational Education Amendment Act of 1968.

Plans for each mobile unit were reviewed by the state and, as with the BOP unit, only one item needed to be modified: the powerlines were inadequate and two lines were run to the unit.

The yearly operating expenses of the PACE Center included the following:

1. Full-time Aide	$4,500
2. Utilities	425
3. Maintenance	150

4.	Replacement and New Materials	700
5.	Testing Materials	500
6.	Subscriptions to Magazines	130
	Total per school year	$6,405

All expenditures are paid by the Career Education Fund except for the utilities which are paid by each school where the unit is parked.

After three years of the program's operation, its value has become widely known, and now each of the five high schools is reevaluating the spatial needs of its school plant in order to find an appropriate space in which to locate a permanent Career Education Center.

In anticipation of the development of these five permanent centers, the Career Education Staff has been investigating possibilities of a new function for the PACE Center Mobile Unit. They have been consulting with the Director of the Career Alternatives Model in Seattle, Washington, and have visited the program twice. Their intention is to adopt CAM's Work Samples model (described in this section) and provide 12 stations in the mobile unit. This newly equipped mobile unit would again travel to the five high schools of the county, and now would serve ninth-grade students.

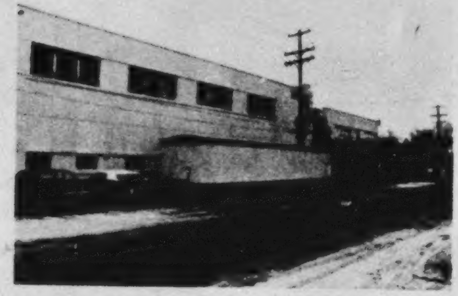


Photo 1

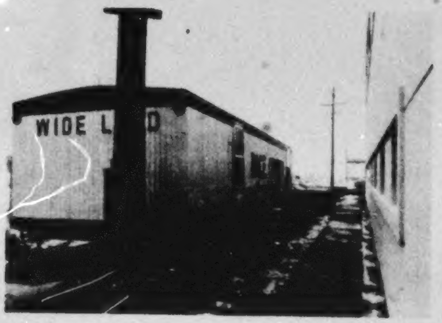


Photo 2

Photo 3

Photo 4

Photo 5

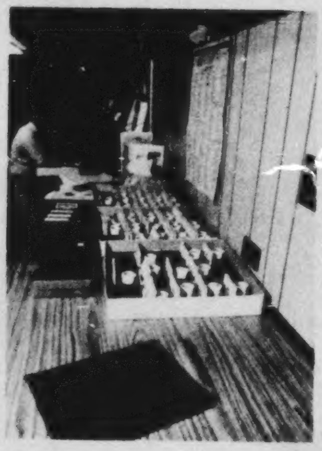


Photo 6

FLOOR PLAN KEY

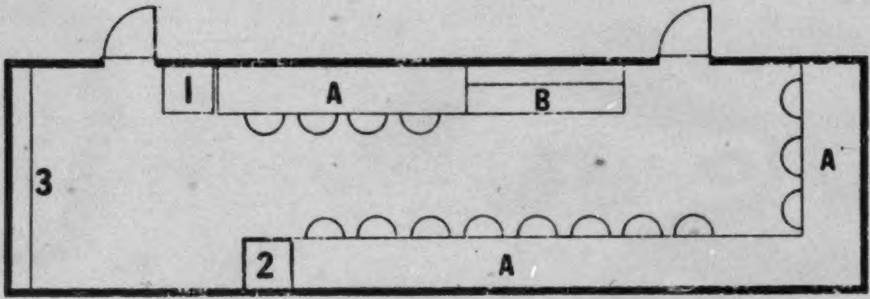
PACE CENTER

ACTIVITY AREAS

A	Audio/Visual Viewing
B	Audio/Visual Storage

EQUIPMENT/SPECIAL FEATURES

1	File
2	Heater
3	Shelves



RALEIGH COUNTY

Overview

The Raleigh County, West Virginia, career education program is a broad one that is designed to provide career awareness, orientation, exploration, preparation, and placement for all students in grades K-12 within the county. It operates in regular classrooms as well as in special facilities.

The Raleigh County School system is composed of 7 high schools, 8 junior high schools, 38 elementary schools, 2 upgraded secondary special education schools, and 2 upgraded elementary special education schools. There are approximately 400 staff members at the secondary level and approximately 380 at the elementary level.

Program Description

The Raleigh County program was designed to meet the following goals:

"Goal 1: Preparation for careers should be recognized as the mutual importance of the achievement for work attitudes, human relations skills, orientation to the nature of the working world, exposure to alternate career choices, and actual job skills.

"Goal 2: Every teacher in every course shall emphasize the contributions that subject matter can make to successful careers.

"Goal 3: "Hands-on" occupationally oriented experiences should be utilized as a teaching method to motivate students in learning abstract academic content.

"Goal 4: Preparation for success in careers should be a key objective of all education.

"Goal 5: Learning should not be reserved only for the classroom, but learning environments for career education should also be identified with the home, the community, and the working establishments.

"Goal 6: Beginning in early childhood and continuing throughout the regular school years, career education shall maintain sufficient flexibility to allow youth to leave for experience and return to school for further education. It shall also include the opportunity for upgrading and continued renewal for adult workers and the productive use of leisure time and retirement years. Career education should seek to extend human horizons from birth throughout life.

"Goal 7: The schools shall continue to accept responsibility for the individual after he has completed diploma or certificate requirements, or has even dropped out of school. While it may not perform actual placement functions, the school shall maintain contact with each individual until he is firmly set on his career ladder, and be available to help him modify his career objective if necessary or help him prepare for a new career at any time in the future.

"Goal 8: Career education is a basic and pervasive approach to all education, but it does not in any way conflict with other recognized educational objectives such as citizenship, culture, family responsibility, and basic education."

The objectives of the Raleigh County program in career education are stated as follows:

1. To create an awareness on the part of students in grades K-6 regarding the many options available to them in the world of work, to develop an awareness of self, and to become aware of the realities of the world of work.

2. To give students in grades 7-9 a knowledge of characteristics of specific clusters of occupations within a broad spectrum of occupational families and to assist them in the analysis of occupational information for decision-making.

3. To provide exploratory and job preparatory programs for students at the senior-high-school level, with opportunities to specialize in social studies, mathematics, science, and language arts and to revise curricula in these areas to meet the relevant needs of students with varying abilities and educational and occupational goals.

4. To improve guidance and counseling services at all levels by the addition of para-professionals and inservice training of the present staff. Special emphasis will be placed on group guidance techniques, involvement of parents and teachers, and utilization of outside agencies.

5. To develop a placement service to provide for placement of all students leaving the educational system in either a job, a post-secondary occupational preparation program, or a baccalaureate educational program.

For students in grades K-6, a career awareness program has been designed to increase the students' consciousness of the options available within the world of work; among the creative experiences through which this world is evoked are role-playing, hands-on activities, field trips, listening to resource persons chosen by the teacher, group and individual research activities, and the use of multi-media materials. The program involves the principal of each school, approximately 330 teachers, and 9,500 students within the county. Here, as in the other grade levels, the curriculum is divided into units--for example, for grades K-2, topics include "What's At a Bank?", "Fireman and Forest Ranger," and "Supermarket." Local business and industrial establishments cooperate by providing professional workers for classroom appearances and by arranging field trips to their respective establishments.

A career orientation program for students in grades 7-9 is designed to provide enough information for realistic tentative career choices; in the interest of relevance, career information is blended into regular classroom instruction. An experimental program allows students to become part-time workers at local business facilities rather than attending industrial arts, physical education, and study classes. At this level, eight junior high schools are involved in the program, with approximately 155 teachers and 3,600 students taking part.

History of Facilities Development

The project began February 1, 1972. From this date until June 30, 1972, the project was funded by State-administered PL 90-576, Part C, monies. This period of time was primarily one of planning and inservice training. As soon as the State's offer to fund a career education program was accepted, the Superintendent of Schools formed a small committee to write the funding proposal; this group, which included a representative from the State Department, worked with a State Project Officer. The group met twice; after two days, the funding proposal was submitted to the State, which in turn submitted it to the Office of Education. The program was begun immediately with funds provided by the state, 5 months before the Federal funds were released. After 2 years of federal funding, responsibility for staff salaries was assumed by the county.

For the period July 1, 1972, through June 30, 1973, the project was funded through the supplemental allocation of discretionary funds for use in career education research and development projects. The source of these funds is the Vocational Education Amendments Act, 1968. During this year of operation, the testing and demonstration site included the service area of Woodrow Wilson High School, located in Beckley, Raleigh County. This project site included all schools in the Town District of Raleigh County, consisting of the high school, junior high schools, elementary schools, upgraded special education elementary schools, and one upgraded special education secondary school.

The United States Office of Education (USOE) provided a program prospectus that was similar to the exemplary program developed by Lincoln County, West Virginia. The program was to serve all children in grades K-12 throughout half the county in the first year, and would extend to the entire county in the second year.

To implement the program, it was necessary to purchase a considerable amount of audiovisual material. A set of sound-on slides (describing 100 different careers) and a projector were also considered necessary acquisitions. However, there was no money in the budget for this equipment. The project director purchased the slides (for about $700) out of project funds, and the students themselves--through the Student Council and Conservation Club--raised the $700 required for the projector.

During the project's first year, emphasis was placed on increased guidance and placement services in the high school. A resource center was established in a free classroom in one of the local schools. This year, the center has moved into a double-sized classroom. No other facility options were considered, since the space was, and is, available and allows for expansion.

No major modifications were necessary to establish the facility. Shop students built student carrels for the resource center. Project staff sought out and assembled, in the center, the large quantity of career-related materials "just sitting around" the school in various places. They were particularly fortunate to have an active and friendly relationship with the Appalachian Regional Laboratory, which asked the project to field-test the career education materials they were developing. The project was able to acquire copies of these materials to incorporate into the center, as well as to obtain their key-sort system and purchase multiple copies of the Dictionary of Occupational Titles from the lab.

Also, during the project's first year, community facilities began to be utilized for work experience of three types: (1) cooperative (students emerge with salable skills and are paid by the employers); (2) supervised (students are employed and trained in a place of work, but the employer is not obligated to pay them, although he can); (3) exploratory (a less committed form of work experience where students are placed in a work situation related to their career goals, for example, aspiring nurses might be placed in a veterans' hospital as volunteer assistants).

Since its beginning, the project has continued and broadened these same community facilities. This year, the project also applied for and received funds from the State Vocational Education Department for two cooperative education coordinators. Project staff feel it received these funds on the basis of positive evaluations of their first-semester cooperative education work.

Student volunteers are used to staff the resource center. In addition, all sophomores are given an orientation week in the center.

Project advice to anyone establishing a similar center is to be sure to obtain a supervisor, if possible, especially if the center is staffed by student volunteers. This project has encountered little difficulty with materials disappearing, but they are easily mislaid. In addition, students' own scheduling changes make volunteer help an unreliable sole source of staffing.

It is also important to plan to use as large a room as possible in a resource center, since materials,quickly accumulate and expansion is a continual process.

The programs at the high-school level have been selected for documentation here. They include typical classroom facilities, a special vocational center, and activities in facilities in the community.

At Woodrow Wilson High School, a typical classroom serves as a career resource center. Students visit the center to use career-related media such as the "Career Exploratory Kit" and a file of career attributes, or the "Guide for Exploring Careers Through Worker Traits," where coded punched cards held in front of a light-producing source will indicate what traits are required of certain career types (Photos 1 and 2).

The Raleigh County Vocational Technical Center is located in Beckley at 229 Second Street and was once a school bus garage (Photo 3). It now serves many functions, one of which is as a co-op program. Students come to the center at periodic intervals and review materials that the teacher has left for them in plastic bins stored in a rack near the entrance (Photo 4).

The day's activities usually include general class discussion on topics such as job interviews, good work habits, and job potentials in Beckley (Photo 5). Almost half of the students placed in local jobs in the first semester of 1974 were placed in health-related careers (Photo 6).

At Raleigh General Hospital, students explore various office jobs, working directly with the staff (Photo 7). The students can also explore the more technical occupations related to hospital operations, such as X-ray technician or dental technician (Photos 8 and 9).

At a nursing home a few blocks from the high school, students help to generate craft activities; their involvement has changed the outlook of life for many of its occupants. Before the program began, the patients rarely left their rooms or socialized. Now they wait eagerly fro the students to come (Photo 10).

WVPB, a student-run FM radio station, is also housed in the Raleigh County Vocational Technical Center. The students prepare and record programs for broadcast (Photo 11) and use professional equipment, including a soundproof broadcasting room (Photo 12).

A Teletype machine provides a constant source of news, running 24 hours a day (Photo 13).

The Daniel Center (located in an old elementary school) provides vocational training and general education for students who have not completed high school and for those who have graduated without job skills.

When the students first come to the center, they spend about 2 weeks working with each of the 16 Singer Vocational Evaluation System Programs: Basic Tools; Bench Assmebly; Drafting; Electrical Wiring; Plumbing and Pipe Fitting; Carpentry and Wood Working; Refrigeration, Heating and Air-Conditioning; Soldering and Welding; Office and Sales Clerk; Needle Trades; Masonry; Sheet Metal Working; Cooking and Baking; Small Engine Service; and Medical Service (Photo 14).

The programs are housed in work-sample stations 3 feet wide and 3 feet deep and have all the tools required, plus a Singer Auto-Vance II audio-projector, filmstrip, and two audio-tape cassettes. Consumable supplies are provided for at least 30 participant evaluations.

The electrical wiring program, for example, is an interesting work exploration into the world of the electrician; it also assesses the participant's ability to make wire splices. During the work assignment, the participant measures insulated wire, cuts it, strips it, and joins pieces of it together. Then he solders the wire into permanent splices (Photo 15).

The staff helps the student evaluate how well he has done at each station and helps to prepare opportunities most suitable for further exploration.

A natural extension of the carpentry and woodworking program occurs in one of the classrooms at the end of the building, where the students learn to read blueprints and to build a mock-up of a frame house (Photo 16). Those students interested in plumbing or electrical wiring will work on the project once the frame is up. When the students have acquired enough experience, they are placed on actual construction projects.

Evaluation is a contractual requirement, and the project hires its own evaluator to perform independent evaluations, which, to date, have been very positive. The staff also expresses great enthusiasm about the project. Moreover, at least 250 favorable articles have been written in local newspapers since the project began; this is viewed by the staff as an indication of widespread community support.

The project, funded during the period 1972-1973, is currently operating without funds. It has submitted a proposal to the U.S. Office of Education for some additional funding to support a new counselor who would work entirely with supervisory and exploratory work experience programs and with placement services.

Photo 1

Photo 2

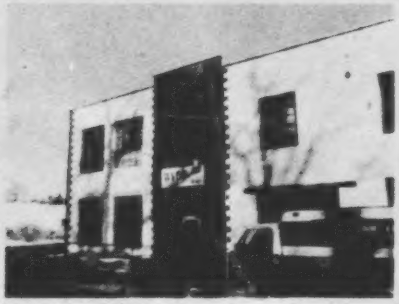


Photo 3

Photo 4

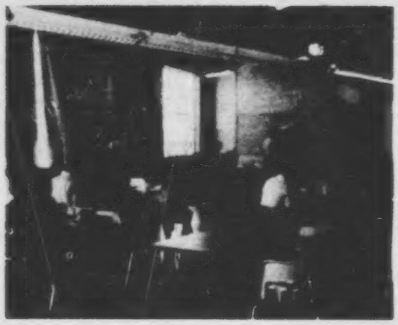


Photo 5

Photo 6

Photo 7

Photo 8

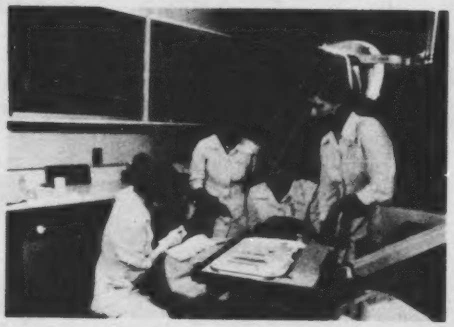


Photo 9

Photo 10

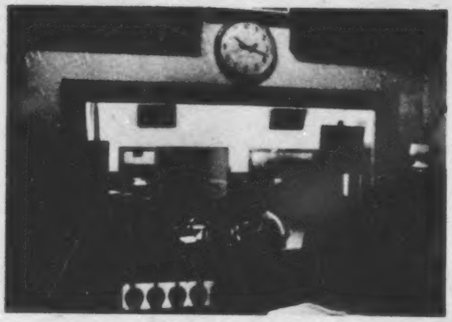


Photo 11

Photo 12

ASSOCIATED PRESS

Photo 13

Photo 15

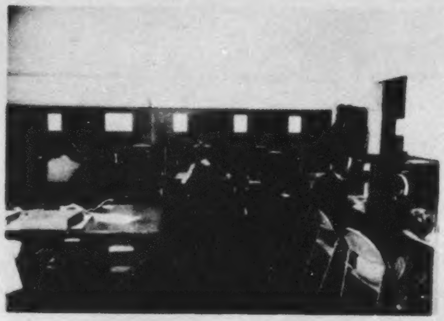


Photo 14

Photo 16

RIVERTON

Overview

The Riverton Career Education Center in Riverton, Wyoming, serves all district students from kindergarten through high school and beyond, some 3,000 in all. The objectives of the center vary according to the age level served: from kindergarten through the 6th grade, career awareness and attitude development are fostered; students in grades 7-10 engage in a program of career orientation exploration and preparation; in grades 11-14, vocational skills are learned and developed. These older students may work part-time in local firms to further develop job-entry skills; employers provide supervision and pay them for their work. The Occupational Life Training Program paid for through Title VIII ESEA funds is a corollary effort using some of the same facilities and providing services for students who have had difficulty in achieving in the basic high school program or who have discontinued their formal education. In addition, the center provides a continuing community service in the form of adult education.

Program Description

The four major characteristics of the center's programs are summarized as follows: career education is designed (1) to acquaint individuals with career opportunities and options, (2) to assist individuals in developing a realistic self-concept, (3) to aid individuals in making career preferences and/or choices, and (4) to provide the vehicle for the development of skills and abilities needed to attain career goals. The emphasis of the center is on "training for job-entry life skills" and on the "dignity of work." At the high school level in particular, there is an attempt to relate the importance of the total school curriculum to the world of work; academic and vocational training are thus being blended into a single approach.

The career education center is located in a new building (Photo 1) and is staffed by approximately 14 instructors certified by the Wyoming State Department of Public Instruction. These teachers are selected on the basis of their own successful trade experience as well as professional teaching experience. The center's programs are divided into 11 career education "clusters." Advisory committees designed to work with each cluster and made up of community participants and educators work closely with the staff of the center.

Classes at the career education center include auto mechanics (Photo 2) and farm equipment maintenance and repair (Photo 3). Building trades (mock-ups) are prepared inside the building (Photo 4) for practice, and eventually the students build a house from the ground up on property located near the school (Photo 5). When the house is completed, it is sold and the crew moves to a new location.

Other career areas include graphics (Photo 6), using sophisticated equipment such as the camera (Photo 7) and food services operations (Photo 8), with a special area for serving and a complete commercial kitchen (Photo 9).

The remaining cluster areas are drafting, agri-business, educational orientation (providing an opportunity for high school students to gain teaching experience at the elementary level), business office education, welding, health careers, and distributive education (Photo 10), which has a school store and a display window where students can practice different arrangements.

History of Facilities Development

The State of Wyoming announced that funds for career education projects were available and that proposals would be accepted from any community that had a junior college. One qualification of the proposed program was that it include grades K-14. This necessitated a combined effort on the part of the Riverton School District and the administrators of nearby Central Wyoming College; a joint committee was formed to plan a project proposal which would include a program to serve all educational levels K-14. The concept was presented to teachers in the district, and a funding proposal was submitted. Riverton Public Schools received a grant of $103,000 per year for 3 years. These funds enabled a committee composed of the project director, school board members, school administrators, teachers, and the school architect to tour existing career education centers in the Rocky Mountain region, North and South Dakota, Arizona, and California. One of the facilities visited, in Rawlins, Wyoming, became one of the models for the Riverton program. Program formats were developed and written by the committee and the architect's plans were drawn up and presented to the community. A local bond issue passed providing $1,490,000 to build the center. The school district had previously been criticized for the inadequacy of its vocational courses.

An advisory counsel of approximately 65 people from the community was formed to determine district needs. Their first concern was that land be acquired in an area of future population growth. Part of the land owned by Central Wyoming College was not being used and was offered for sale; this was found to be suitable. The Riverton Career Education Center is located approximatly two blocks from the college.

The architect worked in close collaboration with the administrators, high-school teachers, school board members, and the project director. The design and other phases of the program's development were overseen by the school board and the project advisory committee. The facility was designed to be slightly larger than was required (Photo 11) to allow for expansion of the program. The facilities were planned so that there would be no overlap with those of Central Wyoming College; that is, the Career Center makes use of facilities that were already in use at the college; such as science, electronics, radio, and television equipment, and new facilities were built large enough to accommodate projects at the junior college level.

The Riverton staff advises anyone undertaking a similar project to get an architect involved early in the planning stage and to travel around the country with the project staff to get ideas. This is considered important in order to develop a close relationship between the project staff and the architect so that the architect has a thorough understanding of the project's programming needs and can take these into consideration in designing the facility.

The documented grade levels--grades 11-14--are involved in a more intensive program called "career preparation." In the junior-high grades, the students have been exposed to materials called Wyoming Occupational Resource Kits (WORK), which provided information on over 400 jobs in the 11 work clusters.[1] With the WORK introduction, counselors help the students match their abilities to local or regional opportunities and offer occupational interest and ability tests. State employment counselors help school counselors to place students in jobs or in 2- or 4-year college programs, so these students can work part-time in local firms (cooperative education) to develop job-entry skills.

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[1] The 11 clusters in the Wyoming occupation model include electricity/electronics, office work, graphic communication, metal processing, transportation service and repair, building trades, hospitality, agri-business, health, family and community service, and distributive occupations. The clusters are arranged in steps so that, with continuing education, an individual can advance from one skill to another.

The facilities support this program by offering the student the opportunity to develop a marketable skill. For example, the graphic communications program includes the following specialized areas: commercial art, providing the student with a working knowledge in design, composition and layout, lettering, studio techniques, advertising, and art direction; printing process, providing the opportunity to develop skills in layout, platemaking, printing, collating, folding, and binding. The career education center supports this program with all the necessary equipment to carry out the work experience process: cameras, darkroom, and various presses and drafting tables.

Comprehensive facilities and equipment are provided in each of the 11 clusters and generally include whatever would be required in each of these working environments operating at an optimal standard. For example, the food services cluster is equipped with a production kitchen; the graphics cluster contains presses, a darkroom, expensive cameras, enlargers, a development room, and most equipment relevant to the field of graphics.

The building was equipped with extra support beams, ventilation, air-conditioning, and insulatory material to comply with building codes; a sprinkler system was required by state fire laws.

Evaluation was built into the original contract. The exemplary project hires an outside management consultant to perform these independent periodic evaluations and, once a year, there is a State Department of Education evaluation. Evaluations to date have been highly positive, according to the project staff. In addition, yearly renewal proposals include a considerable amount of material describing the project staff's own assessment of program strengths, progress, and needs.

Project staff members feel that the center's program gained particular strength by working, in its initial planning stage, with advisory committees representative of all aspects of the community, including the world of work. This is important so that the community can have a good understanding of how the center will relate to it and actually function.

The staff at Riverton also feels that, in projects of this type, there should be much initial work directly with the teaching staff. In particular, an effort should be made to make teachers comfortable with the concepts of career education before they are asked to put them into practice.

The project's overall future goal is to expand with the population. It is currently considering the addition of basic electricity, cosmetology, and horticulture modules to its program.

The development of a media center is also being planned. A third plan is to make a stronger effort to relate academic and career subjects, for instance, to provide a practical math overview course.

Ideally, the staff feels that its own and similar projects should try to reach grades K-14 with a total concept of individualized instruction in which students can progress at their own rate.

Photo 1

Photo 3

Photo 2

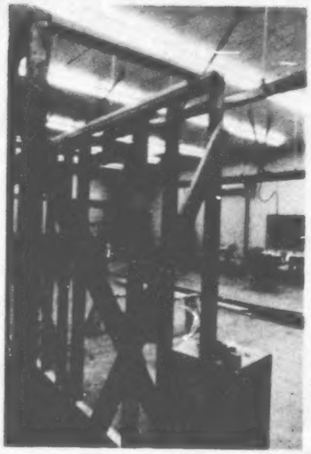


Photo 4

CAREER EDUCATION

Photo 5

Photo 6

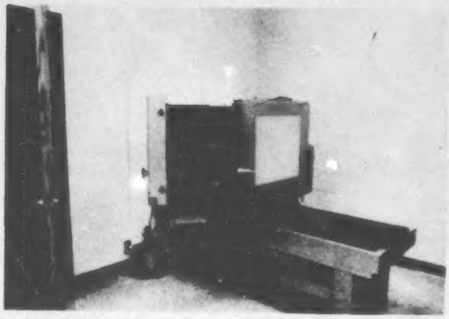


Photo 7

Photo 8

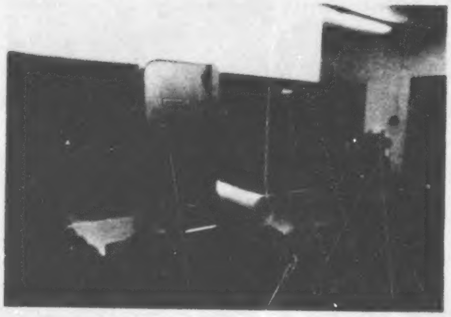


Photo 9

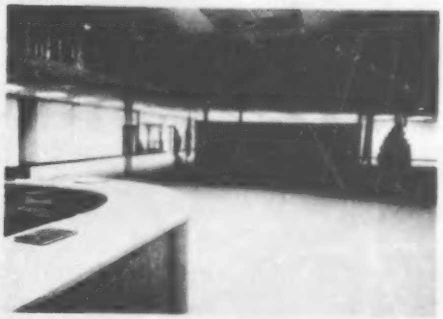


Photo 10

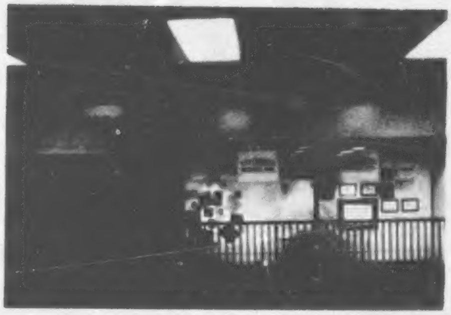


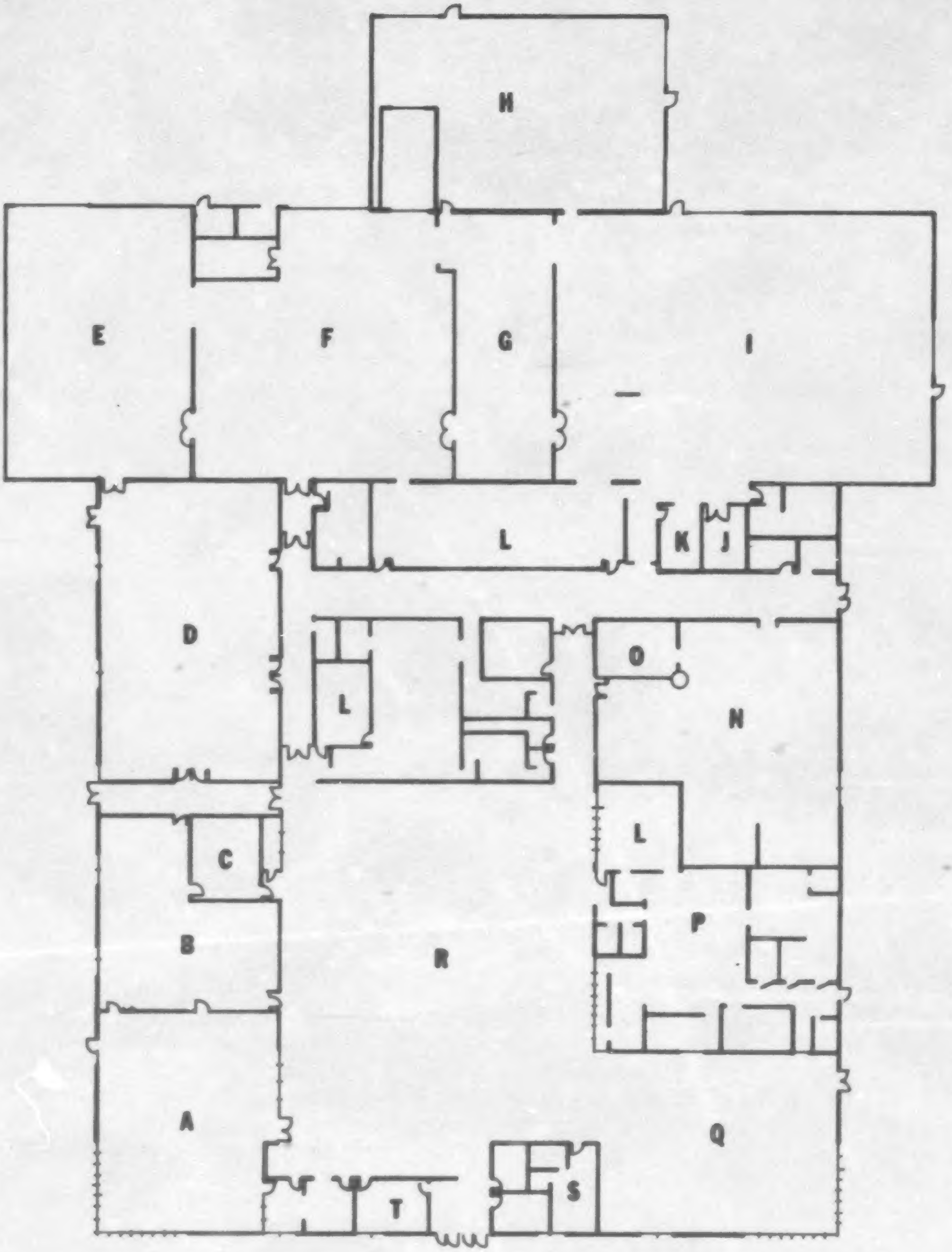
Photo 11

FLOOR PLAN KEY

CAREER EDUCATION CENTER

ACTIVITY AREAS

A	BUSINESS AND OFFICE OCCUPATIONS
B	DISTRIBUTIVE EDUCATION
C	DISTRIBUTIVE EDUCATION STORE
D	DRAFTING/SURVEYING
E	BUILDING TRADES
F	AGRICULTURE
G	WELDING
H	AUTO BODY
I	AUTO MECHANICS
J	STORAGE
K	TOOLS
L	CLASS ROOM
M	HEALTH OCCUPATIONS
N	GRAPHICS
O	DARK ROOM
P	FOOD SERVICE OCCUPATIONS
Q	DINING
R	COMMONS
S	NURSE
T	OFFICE
V	TOILETS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ROUGH ROCK

Overview

Rough Rock Demonstration School is owned and operated by the Navajos through a non-profit organization of Navajo leaders created especially to receive funds and direct the school. It includes a preschool, an elementary school, a middle school, and a high school. In addition to teaching crafts and other potential occupations in elementary and secondary classes, the program includes a self-contained transportable science unit that serves outreach programs on the reservation.

Description of Program

The school (Photo 1) was developed by the Navajos because of a lack of educational facilities to meet the needs of the Indian people, and it has become a community in itself with over five hundred resident students and eighty-two faculty members (Photos 2, 3, and 4). At the school, there is an emphasis on preparing students for the realities of the Navajo working world and cultural awareness, in addition to the more general academic subjects.

The school was begun in 1967 with mostly boarding students, but, since most of the students are now in the compound for the day only, there is enough room for some creative activity. In the elementary school, there are craft rooms, puzzle and game rooms, and play areas. In the high school, there is an extensive crafts program, which includes silversmithing, leathercraft, embroidery, weaving, and beadwork. Many of the items made by the students are put on sale.

Career education is taught as an integral part of the curriculum: in the social studies program, in art and English classes, and in other subjects.

The school is the main facility for teaching career education, and other subjects, because it is the only permanent facility available; in fact, the school is the main employer in this rural, isolated area. Career education involves counseling, which begins in the eighth grade and continues through high school. There are career days, when people are invited to the school to talk about their jobs. Science careers are taught in a self-contained, transportable science unit that was purchased complete with equipment and materials. An important aspect of career education is the participation of students in school operations as a means of introducing them to careers. For example, some students learn welding from the school maintenance staff; others learn printing from the school printshop; business, in the school business office; physical education, from the P.E. teachers;

and nursing, in the school clinic.

The elementary school, for children aged 4-11, is a separate building consisting of eleven classrooms, a library and Native American Studies room, an audio-visual room, a gym, offices, and a reading room. There is a dormitory nearby. Other buildings include a high school dormitory, cafeteria, food co-op, the bilingual Special Services unit, the clinic, a day-care center for the children of school employees, a crafts center, and an administration building.

A new high school (Photo 5) is being built not far from the main grouping of buildings. The design invites community participation by incorporating a central mall that will serve as a gathering space. Phase one of the construction has been completed, and this part of the building is now being used. The 12' x 60' transportable science unit (Photo 6), which can be transported to the various outreach programs on the reservation, was made by Thiokol/EDO. This unit, fully equipped, was delivered prior to the beginning of the 1973-74 school year. The unit is an Transmodular^{TM} Learning System II, which includes a transportable classroom, tools, and equipment; a curriculum design and staff training materials are also included. The unit is flexible and economical, and provides equal career education opportunities for all students. The science-careers training is incorporated in the middle-school curriculum.

History of Facilities Development

Tribal leaders and members of the community felt the need for improved education for the Navajo children, and a demonstration project was designed for a school in Rough Rock. The Office of Economic Opportunity funded the project for $214,000 for one year of operation, and a school was established at an existing BIA school at Lukachukai, Arizona. The project was not successful, however, and the supporters of the project turned to the BIA, which had just completed a new $3.5 million school facility at Rough Rock, one of the most remote areas of the reservation. The BIA agreed to turn the school over to the tribe, along with the $307,000 budget that had been allocated to operate the school and to take over responsibility, instead, for the school at Lukachukai.

In continued support of the project, OEO offered to grant $329,000 for intensive experimentation and demonstration. These funds were earmarked specifically to include non-curricular personnel, including guidance and counseling personnel and crafts instructors. D.I.N.E., Demonstration in Navajo Education, was established as a private, nonprofit organization to receive funds and to direct the school. ("Dine" is also a Navajo word meaning "the people," or "the Navajos.")

The school serves as the main facility for learning; the science unit, which provides the space for the instruction in sciences, was developed because no space was available in the school. It provides for the teaching of chemistry, biology, ecology, and zoology. The unit was selected because it can be moved, and because it comes complete with all of the furniture and equipment required. The school staff, feeling the need for a portable unit, wrote to the Navajo Division of Education at Window Rock, the center of the Navajo nation, requesting ideas. They were referred to several manufacturers, and after they reviewed the different units available they selected the Tiokol unit because it was the best constructed and it could be most easily modified to meet the building codes of the State of Arizona. They studied several floor plans that were available and selected one that would allow both large-group and individual activities. The unit also provides for the use of tapes and cassettes in instruction.

The curriculum is tailored to meet the needs of the Navajos; for example, emphasis is on growing plants and farming. The school is the focal point of life in this rural area, and the teaching of relevant careers in the school is an important aspect of education.

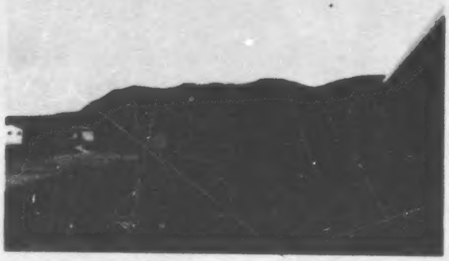
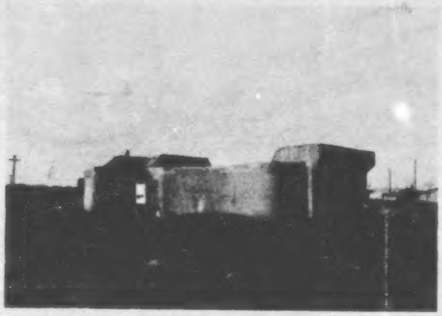


Photo 1



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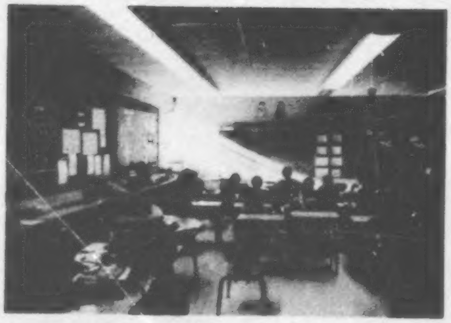

Photo 3

Photo 4

Photo 5

SHEBOYGAN

Overview

The Wisconsin Exemplary Career Education Program's primary goal is to build the self-awareness of pupils in grades K-6, especially in relation to the world of work. The program staff perceives this goal as a basic change from traditional educational philosophy. Practically, students are prepared for continuing vocational courses at the secondary school level by being exposed to "foundational" career-related interest centers. The program is conducted in existing elementary classrooms as facilities, and approximately 25 staff members and 600 students participate in the project each year.

The community of Sheboygan, located on the shore of Lake Michigan, has a population of about 50,000 and the program's central location is urban. The program is considered a pilot program for other schools in the area; it is designed to serve the school systems in Sheboygan and Manitowoc counties.

Program Description

The major thrust of this project was to begin to give students who were moving through the K-12 system some meaningful, coherent career-related experience in order to increase their self-awareness, particularly as it relates to the world of work. A secondary objective was to provide the children with decision-making skills that could be applied to their choice of curricula and career choices throughout their lives. A third objective is to provide exposure to careers and career materials to students in grades K-12.

Every afternoon for at least an hour, each teacher at Grant Elementary School assembles 200 students in eight classrooms. Each classroom becomes a different "interest center," focusing on one type of career. The students become members of "teams" and choose the center in which they will work on a given day. The interest centers are designed to expose students to vocations offered in the Sheboygan area.

Each morning, when students arrive at school, they decide what career interest center they would like to participate in that afternoon. At the entrance of each of the classrooms is a plyboard containing hooks; students place their name tags on one of the hooks to indicate their choice (Photo 1).

Among the different interest centers are the following:

(1) The weaving center, which uses a variety of looms. The classroom is highly flexible and accommodates projects requiring

varying amounts of space, such as stringing a loom or storing materials (Photos 2 and 3).

(2) The leather center, which involves community volunteers who come to class, demonstrate leather-working techniques, and donate leather for students' use (Photo 4).

(3) The material and textile interest center, where students create things, such as puppets (Photo 5). Sewing machines were moved to the center from two local high schools.

(4) A woodworking center, where they explore the careers of carpentry, construction work, and architecture. A local lumber firm contributed two large work benches to the center (Photo 6).

(5) The photography center, which uses the janitor's workroom and sink as a darkroom.

In addition to the centers, there are carpeted areas in some of the classrooms that provide soft, warm, quiet areas for barefoot activities and small group games related to careers (Photos 7 and 8). Often, resource people visit the classroom learning centers and discuss with the children the nature of their work (Photo 9).

At certain times, folding doors between classrooms are opened, allowing students to move about freely, experience a broad range of "hands-on" activities, and communicate with or help other students. In addition, every fifth- or sixth-grader may schedule himself for volunteer service in grades K-3.

Central to the learning center is the library and its librarian, who has experimented with establishing seven interest centers within the library to be used one day a week. At one time, she set out figures, which had been created in other projects, to promote the idea of reading career materials (Photo 10). Older children can volunteer to explain career-related materials in the library to younger children (Photo 11). The library also has a formal media center, where eight students at a time can view a film strip or listen to a tape of commerically developed career education materials (Photo 12). Career education materials are available at all times to students and teachers.

An unusual feature of this program is the special consideration that has been given to teachers. Once a week, the librarian sets up a career-related learning center exclusively for teachers (Photo 13). In addition, the school day has been adjusted so that teachers are given between one and two hours of uninterrupted "free" time, one day per week, to plan career education activities and related programs (Photo 14).

The school's guidance office operates a job-placement center where teachers and custodians post job openings on a bulletin board. Students apply for the jobs, using applications obtained from the counselor center.

Sometimes the staff finds that students learn just as much about the world of work by having their plans misfire as by succeeding. One group of children, after field trips and exposure to visual media, developed an interest in wall construction. They proposed to build an outdoor building, but then discovered they were constrained by the City's building codes and could not proceed with their plan. This first encounter with the legal world resulted in their decision to build a new masonry wall in the classroom on a piece of heavy cardboard.

Students realize that nothing happens unless there is a place in which it can happen. Some of them once had an interest in caring for animals and decided to build a 4' x 6' enclosure, "just in case." Since they built it, they have found opportunities to play host to rabbits, roosters, lambs, dogs, ducks, and other visitors.

History of Facilities Development

In order to implement their basic program goal, the building and reinforcement of student self-awareness, especially with respect to the world of work, project staff members were concerned that students be continually exposed, daily, and as an integral part of their total life in school, to career-related experiences.

The obvious facility for providing genuinely integrated and relevant work-related experiences seem to be the existing classrooms. In addition, of course, there was the obvious cost-advantage of utilizing already existing space. No other options were considered, since none seemed to serve the program's overall purpose as well. Community resources were solicited for help; to provide students with an opportunity to see careers in operation, by visiting some, and to "bring careers" to the school. For example, a truck driver might drive his truck to the school, to describe his profession.

Equipment for the project was originally purchsed with Vocational Education funds provided by USOE. The original proposal was funded for three years, from May 1, 1971 to July 1, 1974, at a level of about $360,000. Currently, the project operates from the total school budget, with no additional funding. Attempts are now being made to establish special budget categories for the needed equipment and materials, and a proposal has been submitted to NIE to provide support for career education staff, as well as a summer workshop to be held in 1975.

Implementation of the program required no construction. Some work was required to install additional electrical outlets (e.g., for audio-visual aids and a stove). Pegboard-type assemblies were constructed for displaying information, and "extra" materials and equipment were purchased, such as work benches, small hand tools, books, pamphlets, reader printers, cassette recorders, and TV monitors. In addition, the school system's truck retrieves used materials from the community, the project applies them innovatively in developing new interest centers.

The staff feels that developing the project facility worked out very well and this move could be easily adopted by any other elementary school of its size. They did find it important that teachers be given the time, flexibility, and training necessary for planning projects, and that the librarian have a central role in the program, not only as coordinator of career information resources and related materials but actually to help plan daily career education activities for the students. Close coordination of career education activities with the guidance counselor, at the elementary school as well as higher levels of the school system, is also considered important.

The Sheboygan community actively and enthusiastically supports the Grant Career Education Program, and the staff are enthusiastic about the success of their program. Each year the program is evaluated by an outside consultant (usually from an area university). These evaluations have all been positive.

Photo 1

Photo 2

Photo 3

Photo 4

Photo 5

Photo 6

Photo 7

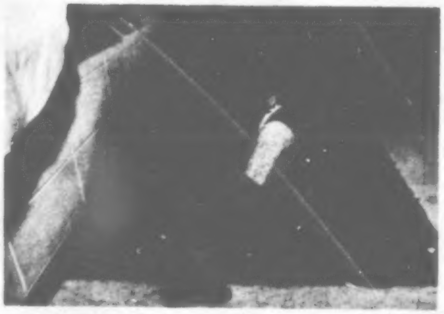
Photo 8

Photo 9

Photo 10

Photo 11

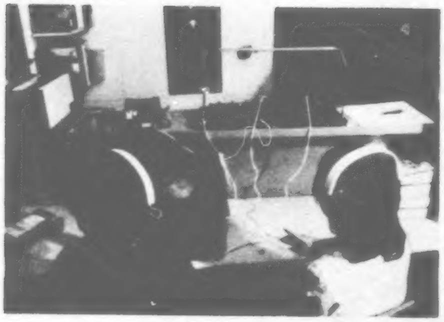
Photo 12

Photo 13

Photo 14

SKYLINE CENTER

Overview

Skyline Center is a facility comprised of a regular comprehensive high school, a Career Development Center serving all Dallas Independent School District high schools, and a Center for Community Services that is part of the adult continuing education program in the district. The curriculum is designed to provide each student with a high school diploma, preparation for further formal education, or career skills. Career education is identified as one of the seven priority goals of the district.

Skyline Career Development Center features 28 cluster areas of study and a unique curriculum. It includes several buildings located on an 80-acre campus (14 acres are under one roof) and is environmentally controlled. It includes a complete color TV studio, a million-dollar computer center, a 30,000 square foot airplane hangar, a media center, a greenhouse, and many other special-purpose areas.

Description of Program

The philosophy recognizes the worth of every child in the community and causes the District to strive to provide all young persons with learning opportunities that will help them discover and use their individual interests, aptitudes, and abilities. The belief is that a part of this discovery should include an orientation to the range of man's endeavors and preparation for a life of productive and satisfying work. Since an individual's identity role in society is greatly influenced by his or her work role, the District is committed to affording each student an opportunity to:

a. develop a positive self-image;

b. develop an understanding of the economic and social structures of our society;

c. develop and expand occupational awareness;

d. define and develop personal goals for self-career identity through a continuing process of decision-making and by integrating knowledge of self and career opportunities;

e. develop positive attitudes towards work, and dignity of man in work, and the society in which man lives;

f. develop an understanding of the value of education relative to meeting the responsibilities of anticipated personal goals;

g. acquire marketable skills as preparation for becoming a productive, self-sustaining citizen.

Skyline is designed to prepare each student for an appropriate transition to the next step in life in accordance with individual career goals, projections, and plans, as well as to foster moral responsibility and enlightened citizenship.

The Skyline Career Development Center is organized into career clusters, each of which encompasses several families of careers. These families are in turn made up of many specific career options. The clusters are:

English-Journalism
Mathematics
Science
Architectural Careers
Aeronautics
Business and Management Careers
Child Related Professions
Computer Technology
Cosmetology
Electronic Sciences
Food Services and Management
Commercial Art
Horticulture
Interior Design
Man and His Environment
Medical and Dental Careers (dental technology and assistance)
Performing Arts (theater, drama, music, dance)
Photography
Plastics Technology
Television
Transportation Services
Visual Arts
World Languages
World of Construction
World of Environmental Control Systems
World of Fashion
World of Manufacturing
Hotel/Motel Management

Among the facilities at Skyline are a 30,000 foot airplane hangar (Photo 1); a complete color television studio with a network of 250 viewing stations (Photos 2 and 3); and a computer center (Photos 4 and 5). Comprehensive facilities for education are also provided in many other skills including: architecture (Photo 6); aviation technology (Photo 7); commercial art (Photo 8); performing arts such as theater and music

(Photos 9, 17); air-conditioning (Photo 10); printing (Photo 11); diesel engine repair (Photo 12); masonry trades (Photo 13); fashion design (Photo 14); dental technology (Photo 15); dental assistance (Photo 16); sculpture (Photo 18); and food services (Photo 19).

Students in grades 10-12, from any part of the Independent School District of Dallas, may apply for admission to any of the career clusters, either as part-time students or as full-time transfer students. For the latter, the Center serves as a complete high school. Classes are offered in daily three-hour time blocks.

Skyline personnel work closely with nearby institutions of higher learning as well as with community leaders in all fields, to bridge the gaps between public and private education, industry and community agencies. Initially, the chief administrator of the program was the Deputy Assistant Superintendent for Skyline Center; under him was a staff of professionals, paraprofessionals, and other personnel. Also responsible to the Deputy Assistant Superintendent was a staff of specialists in curriculum, staff development, research and evaluation, and communications. Currently, the principal is the Chief Administrator of the facility, but the manager of the Career Development Center exercises responsibilities for programming, budget, and personnel of the 28 cluster areas. The Director of Continuing Education exercises responsibilities for adult education programs. In addition, several industries and professions have entered into active partnership with the Center. A team of over 100 curriculum writers spent several months in 1971 developing courses of study grouped as career clusters. RCA had initial involvement in curriculum and program design in fourteen cluster areas.

History of Facilities Development

The planning for Skyline Center began in 1965 under the leadership of a former superintendent of schools and the Board of Education, along with numerous groups and individuals in the community. The Texas Education Agency, the Dallas Chamber of Commerce, and representatives of many industries assumed a major role in initiating the project.

Planning for the project may have been somewhat encouraged by a series of newspaper articles written in 1964 by a local reporter, criticizing Dallas for its lack of pre-employment laboratories.

Discussion for planning the Center focused on local employers' needs (e.g., in business and industry), both current and projected. Advisory committees were established, representing specific businesses and occupations. These committees articulated their individual interests and a comprehensive report was developed on exactly what high school level educational programs were needed in the community. The basic underlying idea was to teach the total spectrum of technology in secondary schools and, in this way, to meet the needs of a wide range of employers in Dallas.

It was decided to teach as many subjects career clusters as possible to give students a maximum number of options. Advanced academic career programs were to be integrated with vocational programs. The idea of a central facility to which students would be transported from all schools, was complementary to the original program purpose and no other options were seriously considered. In addition, at about this time a tract of government land became available to the school district at a nominal cost. This land was purchased but then judged to be too small for the Career Center envisioned. The availability of the land and its purchase, however, reinforced the idea and the planners found a 50-acre tract, located adjacent to the downtown area. As the planning developed, they decided that the amount of land was inadequate for their plans and purchased an additional 30 acres.

A school bond allocated $21.5 million (of a total $65 million for education) to the Skyline Center, in 1967. The project staff feels that this financing was made possible in large part by the strong support voiced for Skyline by the business community. In addition, the School Board had employed a public relations consulting firm to make the idea of a large career education center attractive to the voters.

An architect was selected, based on his past performance of building schools for the school district. He hired engineers to help in the facility's construction. The school district hired craftsmen to work with the architect. Three people within the school district assumed programmatic responsibility for career education and worked with the architect to develop a facility design. These four people also visited other programs around the country to collect and develop ideas that might be applicable to a plan for Skyline. In addition, a group of academic and vocational teachers formed a planning committee and worked with the architect. The teacher of each subject contributed to the planning of facilities for his subject. Initially, the facility was planned as a vocational center; it was expanded during the planning stages to include other career clusters.

Groundbreaking for the complex took place in 1968 and doors opened to the first students in March 1971. Current annual operating costs are about $2.5 million with a $750-800 cost per pupil (per year). The local school district provides some funding and the Chamber of Commerce has continued to furnish various types of support to the project.

The project staff's advice to a district implementing a similar project is to plan for needed office space; they have had to use the school store as an office. Flexibility should also be an important planning consideration; for example, using movable partitions for walls allows for expansion or modifications easily and inexpensively. Lack of planning in this area has caused a few minor problems at Skyline.

One specific, unforeseen problem at Skyline, about which staff warn other adopters of the design, concerns student transportation arrangements. Originally, the staff planned that students would use the regular public bus system as transportation to and from Skyline. This idea did not work and public school buses are now used. No provision was ever made for loading and unloading students, and it is now felt that at least four sheltered stations are necessary, particularly for transportation in inclement weather.

Photo 1

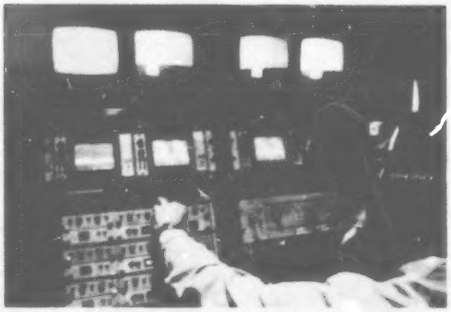

Photo 2

Photo 3

COMPUTER CENTER

Photo 4

Photo 5

Photo 6

Photo 7

Photo 8

Photo 9

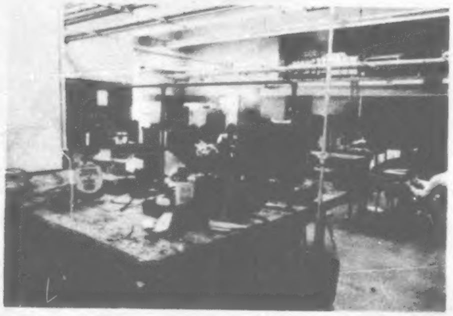

Photo 10

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Photo 14

Photo 15

Photo 16

Photo 17

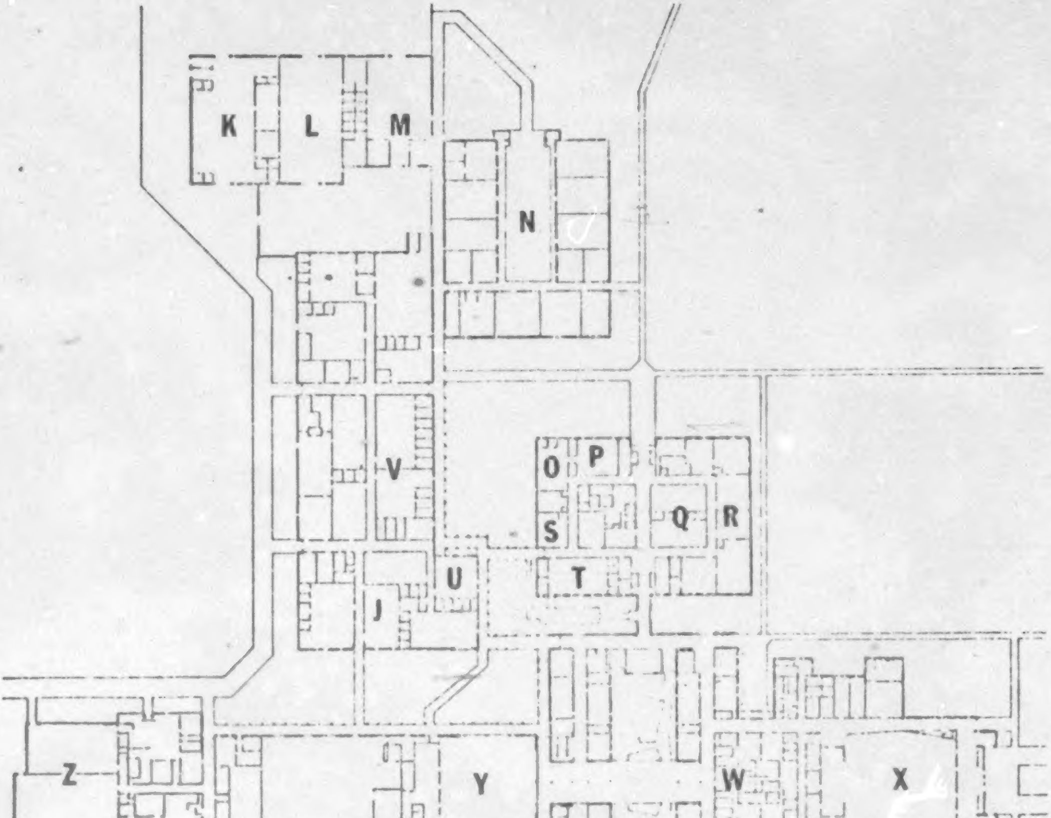
Photo 18

Photo 19

ACTIVITY AREAS

GROUND FLOOR

A	Music
B	Business Cluster
C	Computer Science
D	Child & Youth
E	Horticulture
F	Aeronautics
G	Dance Studio
H	Welding
I	Sheet Metal
J	Fashion Design
K	Paint & Body
L	Automotive Technology
M	Diesel
N	Construction Cluster
O	Commercial Art
P	Photography
Q	Architecture
R	Graphic Arts
S	Cinematography
T	Sculpture
U	Drama
V	Plastics
W	Administrative
X	Auditorium
Y	Lunch Room
Z	Girls & Boys Gyms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GROUND FLOOR

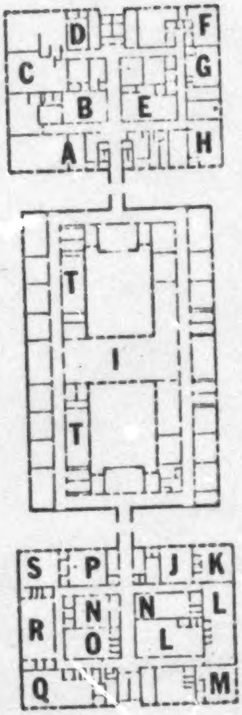
ACTIVITY AREAS

SECOND FLOOR

A	Business Cluster
B	Homemaking
C	Man & His Environment
D	Cosmetology
E	Dental Technology
F	Vocational Nursing
G	Medical Careers
H	Dental Assisting
I	Resource Center
J	Crafts - Jewelry
K	Painting Studio
L	Communication Electronics
M	Interior Design
N	TV Arts
O	Digital Electronics
P	Art
Q	Appliance Repair
R	Radio - TV Repair
S	Drafting
T	Science Cluster

THIRD FLOOR

A	Social Science Office
B	English Office
C	Reading Lab
D	Language Office
E	Assistant Principal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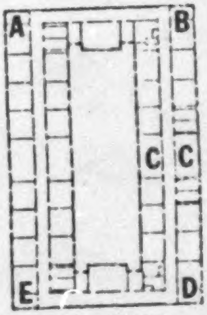
SECOND FLOOR



THIRD FLOOR

SYRACUSE

Overview

The Life Centered Curriculum of the Syracuse City School District is essentially a reorganization of the present elementary curriculum to include career education as an integral and inseparable component of the total educational process. The Life Centered Curriculum program begins in kindergarten and has its major emphasis in the sixth grade. It is designed to increase awareness of local career opportunities through audiovisual displays, to allow hands-on experiences in simulated settings, and to provide materials and incentives for follow-up classroom activities. Part of the program takes place in an elementary school building and serves 90 sixth-grade classes and 95 fifth-grade classes each year.

Description of Program

The Life Centered Curriculum Program has as its main thrust the introduction of the concept of career education in the elementary grades, with the cooperation of businesses in the Syracuse area. A major thrust of the program begins in the fifth grade with a unit entitled An Introduction to the World of Work. This is a student workbook that allows the students to complete a self-assessment program, to develop an understanding of the relationship of school to work, to understand the meaning of work in our economic system, and to build a vocabulary of terms related to the world of work.

In the sixth grade, students are given a more intensive program. They begin by reviewing the fifth-grade workbook and are given some additional instruction, on management, the Social Security System, and other related topics. Then each classroom, in turn, makes two full-day visits to the Career Center, and the Skills Center, which are located in two adjacent classrooms at the Franklin School, where the traditional furniture has been removed to make space for the centers.

For the first half-day, students work in the Career Center, which contains seventeen walk-in study carrels furnished by Syracuse industry. Most of the booths are equipped with tape recorder, two headsets, and a tape that directs activities in the booth. Pictures, hands-on materials, and worksheets are provided for each student. The booths (Photos 1-6) include descriptions of the General Electric Company, Western Electric Company, Niagara Mohawk Power Corporation, the Police Department, auto work, and other careers, selected for their relevance to available jobs in Syracuse.

The students spend ten minutes in each booth, reading material, trying out tools or uniforms, and listening through earphones to a description of the career.

During the remainder of the first day and all of the second day, the students work in the Skills Center across the hall from the Career Center. The Skills Center is equipped with seven different interest areas: a woodworking shop; a sewing area; an area equipped with electric typewriters; adding machines; cash registers; a restaurant operation and a health center (with hospital bed and life-sized dummy). The purpose of this center is to give each child hands-on experience: a chance to work with real tools and equipment.

A workbook provided to students in the Skills Center provides problems to work using adding machines (Photo 7), cash registers (Photo 8), and typewriters (Photo 9). The two sewing machines are in constant use (Photo 10), and help is always close by. The hospital bed and life-sized dummy allow students to practice medical tasks, such as taking a pulse (Photo 11). Woodworking is taught by having the students construct a birdhouse, using instructions from the workbook (Photos 12 and 13).

After the students finish their two days at the Skills Center, they return to their classrooms with a footlocker filled with printed brochures describing careers (Photo 14). Each footlocker (Photo 15) also contains individualized information produced by the project on most of the major careers. Students are provided with an individualized career study unit, in three versions, color-coded according to the ability level that is required for each. Each study describes the nature of the work, the requirements, the working conditions, and advantages of doing this kind of work. It also contains multi-media equipment and related materials (Photo 16).

During implementation of this follow-up program, the teachers of each class direct the activities and decide, on the basis of their own background and that of the class, what shape the program will take. Resource materials are also provided for teachers to use in planning activities.

Center visitation is an activity in the "Occupational Clusters" unit of the Life-Centered Program.

History of Facilities Development

Career Center and Skill Center were originally funded by the U.S. Office of Education Vocational Education Acts Amendments in 1970 under a proposal entitled "Guided Occupational Orientation Program."

In the spring of 1972, after reviewing the success of this program, the Committee of School District Personnel wrote and submitted to USOE a proposal entitled "The Life-Centered Curriculum Program." The proposal was written in competition with other school districts in New York State. The planning committee included parents from each elementary school, and twenty-five local business people. Funding was given for two and one-half years.

Representatives of local business and industry, parents, and various community groups were enlisted as members of an Elementary Curriculum Revision Team to add perspective to the program; the community at large provided resource persons, teaching materials, field trip sites, consultants, and advisors to help establish the program.

Franklin School was chosen to house the Centers because more space was available there than at other schools. The program staff did not consider any other options for housing the program because the classrooms needed were available and involved no cost. One consideration was that the classrooms chosen should be near one of the building's exits, to avoid unnecessary disruption of regular classes. In fact, however, the Career Center can be easily moved into any standard-sized classroom.

The Skills Center was first housed in a large trailer; it was considered most effective and efficient to take it around to the schools. However, there were problems associated with the trailer: it depended on a gas generator for power, which posed a problem during the gasoline crisis, and a special truck was needed to haul it around. Arrangements had to be made with city officials to design routes that could accommodate this large vehicle's movement from one school to another and it was sometimes difficult to find an adequate space for parking at a school. In addition, there were moving fees, and, because the trailer had had much wear, maintenance costs began to rise. The program staff then decided to house the Skills Center in classrooms that were available because of a decline in the area population. This arrangement has worked well: students are bussed to the Career Center and they then move to the adjoining classroom to visit the Skills Center.

The physical installation of the two centers was quite easy. There were no aspects of the planned activities that required the district to comply with special requirements for lighting, ventilating, etc. The many pieces of equipment that are used (sewing machines, typewriters, etc.), plus the tape recorders used in each of the carrels at the Career Center, required the addition of electrical outlets. Plywood partitions were built by a school employee for the Career Center carrels. No other physical construction or modification was necessary. In fact, with installation such a relatively simple operation, the staff is considering moving the program centers to classrooms in another school next year.

The Skills Center contains the following equipment:

1. Two tables for woodworking with storage below containing hammers, handsaws, "C"-clamps, planes, nails, etc.;
2. Two sewing machines;
3. Two electric typewriters;
4. Two adding machines;
5. A hospital bed with a life-sized dummy;
6. Three cash registers;
7. A portable oven for baking.

Equipment was donated by several local businesses. Niagara Mohawk (the New York Power Corporation) provided a Career Wagon containing samples of equipment used by the company and lessons in how to use it; General Electric sent six engineers to teach and show movies and slides. Fully equipped and constructed booths were donated by Westinghouse and Niagara Mohawk Power Corporation; the school district provided one booth and the remaining sixteen were built by the school district. These included materials donated by various businesses and industries represented in the Syracuse area.

Essentially, the Life-Centered Curriculum is based on the goals listed by the New York State Board of Regents, and on the USOE K-12 Career Awareness Model. Curriculum units were written by a group of 100 district teachers. In some cases, the curriculum units were refined or rewritten in response to community feedback. Community involvement in the program has been and continues to be a highly important element contributing to its success.

The district has officially adopted the Life-Centered Curriculum; as of the 1975-76 school year, two staff positions will be supported by district funds. District supervisory personnel will oversee the program, which will continue to operate in the Franklin School classroom until the staff chooses to move it. The Career Center and Skills Center operations have been successful and will be continued without change in the immediate future.

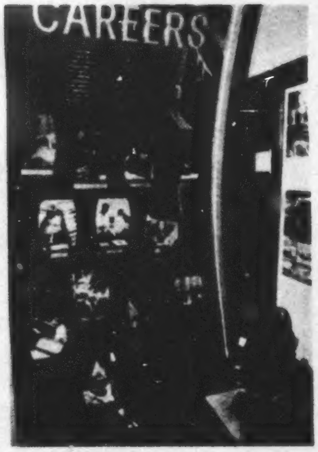


Photo 3

Photo 4

Photo 1

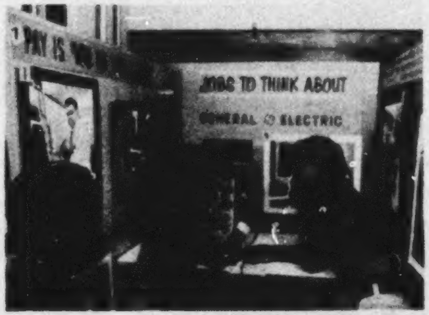

JOBS TO THINK ABOUT
GENERAL ELECTRIC

Photo 2

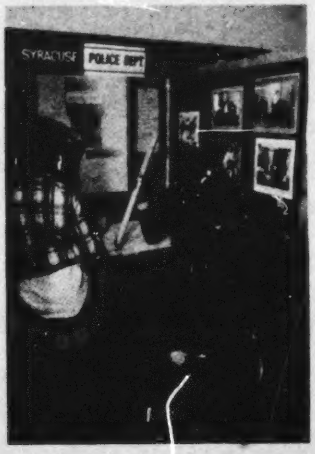

SYRACUSE
POLICE DEPT

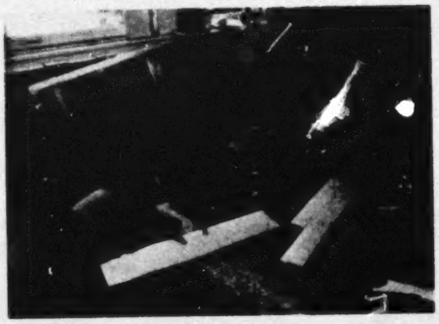
Photo 5

Auto Workers

Photo 6

Photo 7

Photo 10



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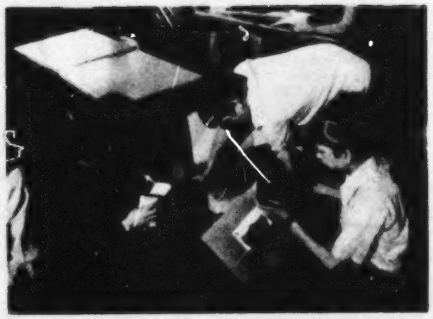

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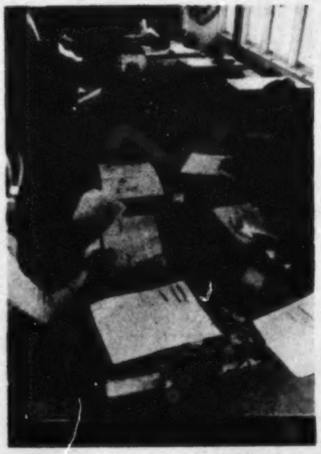


Photo 16

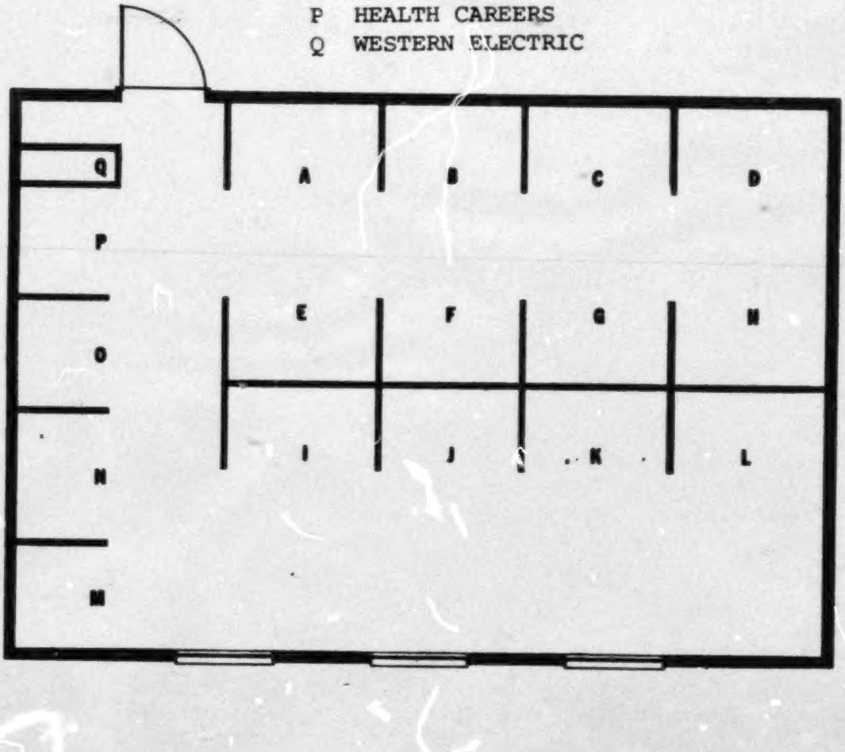
Photo 15

FLOOR PLAN KEY

CAREER CENTER

ACTIVITY AREAS

A	POLICE
B	POSTAL SERVICE CAREERS
C	COSMETOLOGY
D	FOOD SERVICE WORKERS
E	FIRE FIGHTERS
F	FINE ARTS & HUMANITIES
G	TELEPHONE COMPANY CAREERS
H	HOSPITAL CAREERS
I	FACTORY WORKERS
J	AUTO WORKERS
K	SCHOOL WORKERS
L	NIAGARA MOHAWK
M	GENERAL ELECTRIC
N	NEWSPAPER CAREERS
O	CONSTRUCTION WORKERS
P	HEALTH CAREERS
Q	WESTERN ELECTRIC



WACOP

Overview

The Westside Area Career Occupations Project (WACOP) is a media-based project in Glendale, Arizona, containing one of the largest and most complete collections of audiovisual career education materials in the United States. The large, varied, and highly sophisticated character of its community is considered an unusual feature of the program. WACOP serves an urban-rural area, covering half of metropolitan Phoenix and stretching into the western part of the country. Several districts served by the project cover many square miles and contain only single-classroom schools. As its primary program thrust, the project offers both commercial and locally produced career education audiovisual materials to teachers, counselors, librarians and administrators on a two-week loan basis. Eighty-three schools in 28 districts are served by the project.

Program Description

The media center, originally housed in one corner of a high school library, is now established in a former drug store in downtown Glendale, Arizona, where free parking is plentiful and the building is highly visible (Photos 1 and 2). The Center's shelves provide ample and suitable storage space for its rapidly accumulating materials (Photos 3 and 4).

WACOP has become a "one-stop" source of information related to career education and an exchange system for ideas among its users. Project staff members drive to the schools, presenting materials that include, but are not limited to, audiovisual equipment (such as a Dukane, an Audio-study mate, cassettes, 16mm projectors, 8mm projectors, a carousel projector and microfilm readers), books and pamphlets. Approximately 500 teachers participate in the program and make the materials available to approximately 9,000 students per month.

In addition to providing materials, the drug store's original soda fountain serves as a demonstration/discussion/training workshop area for career educators, many of whom are from other districts (Photo 5). Frequently, workshops are held on broad topics, such as career guidance and alcohol and drug education, or on specific subjects, such as economics and mathematics. Workshop participants are permitted to examine the Center's materials, to ask questions about how they can be used and, even, to borrow them (Photo 6). The soda fountain also serves as a check-in counter and a general storage area. The Center also has multi-media equipment where teachers can preview materials (Photo 7). The large parking area facilitates easy access to the Center.

A career education media source list was published by the Center in 1974. It was intended to provide guidelines for anyone interested in developing career education resources. A monthly newsletter is also published, featuring a "career theme of the month."

History of Facilities Development

Immediately following the enablement of Career Education by the Arizona State Legislature, the State Department of Education sent out guidelines on how to apply for funds. Three men from Glendale--one from the Junior College, one from the largest high school in the district and one of the area Vocational Education Coordinators for the five westside schools wrote a proposal to the State Department of Education. The project was funded in September 1971, as one of 13 pilot programs in the State, with a first-year operating budget of $129,000.

Each spring, a proposal for renewal must be submitted to the Arizona State Legislature. A justification of the previous year's expenses is considered a crucial part of the proposal. The WACOP staff feels that it has received continued support in recent years largely because of a strong and growing community interest. This interest is manifested in, for example, the positive testimonials it has received from students, teachers, and other program users, as well as requests from educators in other areas of the country who are interested in modeling their own programs after WACOP.

The major project goal of providing media materials to schools made certain space requirements essential. The physical space needed to be centrally located, large enough to provide adequate storage, and on the ground floor for ease of moving materials. Eight schools of all levels provide some space for project consultants and staff. One local high school was singled out to house the project's audio-visual center in one corner of its library. By the end of its first year of operation, this space had already become inadequate. The purchase of a new building was momentarily considered but rejected after some initial inquiries about its high cost. The option finally adopted was the only other option considered, renting a space in a permanent facility, with a location central to the area schools and on the street level. By this time, parking space had become an added criterion for site selection to allow for visitors, workshop participants, and transportation vehicles.

A drug store, vacated for three years, was selected as the best new site for three major reasons, in addition to the criteria mentioned above: (1) its enormous number of built-in shelves; (2) its open space; and (3) its low cost per square foot. The drug store is adjacent to another building into which the project has expanded, to obtain additional office and storage space.

The process of converting the drug store into the media center consisted mainly of housecleaning the unoccupied building, discarding material, and scraping, painting, and furnishing. A bathroom was installed, existing electrical outlets were modified, and the air-conditioning (a climatic necessity in Glendale) was repaired. No building code constraints were placed upon the project; however, a fire extinguisher was installed as required following an inspection by the Fire Department. The pharmacy counter and certain cabinet pieces were removed. Open space was considered functional for the Center's mission and was left unchanged. The professional staff members, which include a draftsman and a carpenter, were able to perform all of the labor required by these modifications.

WACOP's staff had only one word of advice for anyone planning a facility such as theirs: obtain a written agreement from the landlord as to what he will and will not do with respect to building repair. The WACOP staff had received verbal agreements about basic repairs (such as bathroom installation and air-conditioning repair), some of which were met and some of which were not. In addition, WACOP's building lease requires that all repair and maintenance costs be paid for by the tenant. Since the annual budget for the project must be submitted in advance with each renewal proposal, it is important to allow for unforeseen repairs of a building, particularly an old building. The staff feels that they would develop its facility the same way again; they are very satisfied with it.

Budgeting for WACOP is separate from the general school budget. The initial funding of $129,000 is now up to $259,000. The WACOP budget is broken down by goals and objectives, and by activities related to these goals. The Arizona State Department of Career Education sends a list of approximately twenty goals for the year to each of the State's eighteen career education projects, including WACOP. The staff of each project then chooses which of the goals it will pursue. Among WACOP's goals for 1975 was to order, receive, and process certain materials, and to establish use-control patterns. These goals and objectives required certain specific activities, such as hiring staff members, processing materials, and so on, and each item became a line item in the budget. One rough breakdown furnished by WACOP was $52,154 budgeted for the goal of operation of the Center and $20,898 for media purchasing.

Each item in the Center is evaluated and catalogued according to the grade level it fits, and the areas to which it relates: Career Awareness; Self-Awareness; Appreciations and Attitudes; Decision-making; Economic Awareness; Skill Awareness; Beginning Competence; Employability Skills; and Educational Awareness. The material is then listed on a card and the cards are arranged in a matrix of envelopes mounted on heavy cardboard. This display enables teachers to locate appropriate materials for whatever lesson they are planning.

Aside from general staff enthusiasm about the success of their project, WACOP's success is indicated by its renewed and increased funding after careful scrutiny of cost-effectiveness by the State Legislature. As mentioned earlier, other state educators make frequent requests for information about the project as a potential model, and many students and teachers have made public, positive statements about their involvement in the project.

The WACOP staff feels that this project will have fulfilled the catalytic aspect of its purpose by 1980, that is, the individual school boards will by then have begun to collect materials and training related to career education. Since no additional state funds are to be supplied for career education after 1980, its activities must then be absorbed by the school districts.

Photo 1

Photo 2

Photo 4

Photo 3

Photo 5

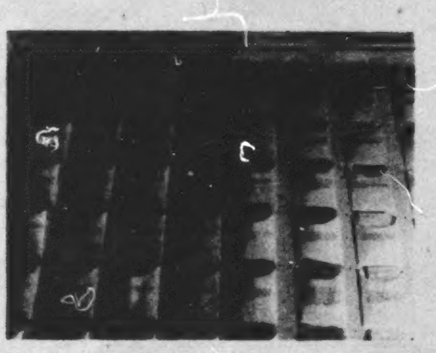


Photo 6

Photo 7

Photo 8

WORK SAMPLES LAB

Overview

The Career Alternatives Model (CAM) is an occupational skills center operating in the Seattle, Washington, area. Within this model, a Work Samples Laboratory was developed for junior high students in the Highline School District to provide them with hands-on experience in a variety of careers. The program operates within the skills center and uses slide-sound equipment obtained specifically for the program.

Program Description

The Highline Work Samples Lab uses a large room within an existing tri-district vocational center. The program features synchronized audio cassettes and 35mm slides to present work samples activities in various careers. The different activities involve the categories Data, People, and Things, and tasks of low, medium, and high complexity. The students view the procedures on the slides and then proceed to other work areas to try out the tasks they have seen. When students have finished with a given task, they may either proceed to another task or examine supplemental career-related materials that are displayed in one corner of the room (Photos 1-12).

In addition to the cassette-slide presentation, there is supplementary, commercially prepared material on specific jobs related to the work samples (Photo 13). To add to these materials, the lab supervisor prepares sheets that describe each job, and students are given these descriptions to take with them when they leave the lab.

Each junior high student in the Highline district area visits the Work Samples Lab for two days. Students are encouraged to try out a variety of exercises with different levels of complexity. For example, sorting mail is labeled as a task of low complexity, while analyzing job applications is a high-complexity job. Students try out jobs at all levels and get a feel for the level for which they are best suited.

History of Facilities Development

The staff of the Career Alternatives Model program in Seattle wanted a fresh approach to career exploration at the junior-high level. During the past decades, program developers in vocational rehabilitation have developed work sampling techniques to provide a variety of hands-on simulated work tasks designed to help them assess a client's potential for learning to perform. The staff at the CAM project felt that, by shifting the emphasis from assessment to exploration, they could use work-sampling techniques with success at the junior high level.

In evaluating the facilities and materials to be used, the staff decided that the existing occupational skills center had space to house the Work Samples Lab, and that this location was the most cost-effective. They considered using a mobile unit, but rejected the idea because of the energy crisis and gas shortages, and because it had space limitations.

The staff investigated what materials were commercially produced that could be used in the Lab, and found that they had some shortcomings:

- The cost was high.
- Materials were too specifically aimed at career assessment, rather than practice.
- Materials required too much time to complete (up to 10 days for some) and, since the systems could only be purchased intact, they could not be bought as components of smaller time duration.
- The skills presented did not reflect the local job market.

Based on these observations, the staff decided to develop an original set of materials for the Lab. They wanted materials that would meet a set of basic criteria:

- Student involvement should not exceed two days, so that all students could participate (1500 per year).
- Work samples should be structured around the Data-People-Things concept--a concept that allows exploration and practice in different types of occupations. This concept emerged to allow for: (1) the students' ever-developing interests, (2) the inability to expose students to all jobs, and (3) presentation of the worker's point of view.
- Work samples should reflect the local labor market.

The staff selected a work sample specialist who helped them develop a master plan. The plan called for development of nine work samples, including three (for three levels of complexity) in each of the categories of data, people, and things. The staff obtained equipment that utilized a synchronized combination of audio cassettes and 35mm slides, as well as supplementary written materials. The slides used in the Lab were developed entirely by the staff. The work samples specialist wrote the scripts, a staff photographer took the slides, and various members of the staff dictated the tapes.

In addition to the slide/tape presentation, one of the key features of the Lab is the videotaping of students as they try out skills in the People area, allowing the students to see how they perform in these activities. The skills chosen met several criteria:

- The skills were needed in the local job market;
- The activities were not overly messy and disruptive to the environment;
- The activities were small enough that they could be accommodated in the space available; and
- The activities could be accomplished in a 45-minute period, the maximum time that the staff felt students would be able to concentrate on one activity.

The Work Samples Laboratory was divided into carrels that were built to house slide-sound units.

Work tables were made from sewing machine cabinets salvaged from the home economics lab: plywood boards were bolted onto the tops to cover the machine opening, and the table was divided into two work areas by a separating strip of wood. The equipment necessitated additional electrical outlets. Rugs were added to separate spaces and to provide color. The carpeting protects equipment if it falls and provides some soundproofing.

There was initially a problem with maintenance and operation of the equipment, which jammed frequently and was difficult for students to operate. The staff recommends that an assistant be hired to take care of such problems.

Another difficulty resulted in the rearrangement of space. The videotaping area was not sufficiently isolated and was distracting to other students. It was moved to a corner, and was separated by a partition. Videotaping is now done without distraction to others. Overall, the Work Samples Lab has had a favorable response in Highline.

Photo 1

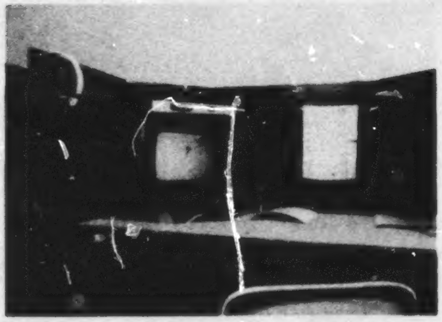


Photo 2

Photo 3

Photo 4

Photo 5

Photo 6

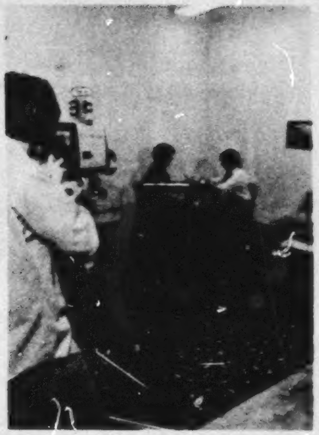


Photo 7

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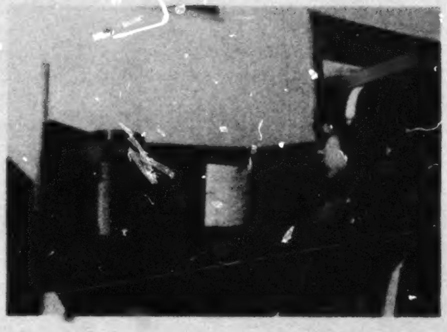

Photo 10

Photo 11

Photo 12

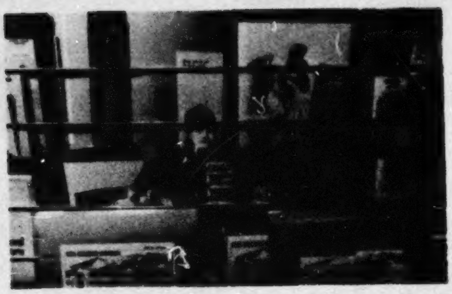

Photo 13

V. RESOURCES

Literature on the planning and use of educational facilities is abundant. It is also so widely dispersed that it is not readily available to educational planners and architects.

The following resources list provides planners with a starting point. It is not comprehensive; it does not attempt to bring together all of the literature on facilities for career education or on educational facilities in general. Highly selective, the list consists of works the authors found useful. It is a place to begin.

The resources were originally identified through extensive on-line computer-based searches of the literature; manual searches of traditional library indexing and abstracting services; perusal of the journal literature; letters to ERIC Clearinghouse, associations, educational laboratories, and research institutes; advice from experts; and information collected by SDC staff on visits to specific sites of career education facilities.

The resources are presented in broad classifications.

A. GENERAL WORKS ON CAREER EDUCATION AND EDUCATIONAL FACILITIES

1. Career Education

A few basic books to introduce concepts, current problems and opinions in career education:

Bailey, Larry J.; and Stadt, Ronald W. Career Education: New Approaches to Human Development. Bloomington, Illinois: Knight Publishing Co., 1973.

Begle, Elsie P.; Dunn, James A.; Kaplan, Robert M.; Kroll, John; Melnotte, Judity M.; and Steel, Lauri. Career Education: An Annotated Bibliography for Teachers and Curriculum Developers. Palo Alto: American Institutes for Research, 1973.

Hoyt, Kenneth B. Career Education: Current Trends in School Policy. National School Public Relations Association. 1801 N. Moore St., Arlington, VA 22209

Hoyt, Kenneth B. Career Education: What It Is and How To Do It. Salt Lake City,: Olympus Publishing Co., 1972.

Hoyt, Kenneth B.; Pinson, Nancy M.; Larramore, Darryl; Mangum, Garth L. Career Education and the Elementary School Teacher. Salt Lake City,: Olympus Publishing Co., 1972.

Rieder, Corinne et al. Career Education Program Plan for FY 1975. National Institute of Education, 1200 - 19th St., N.W., Washington, D.C. 20036. September 1974.

2. Educational Facilities

A few basic general sources for planning school facilities should be consulted, for example:

Callendar, Time Saver Standards. Fourth edition.

Castaldi, Basil. Creative Planning of Educational Facilities. Chicago: Rand McNally and Co., 1969.

Chase, William W. Problems in Planning Urban School Facilities. School Plant Administration Series, Bulletin 1964, No. 23. U.S. Department of Health, Education, and Welfare, Washington, D.C., 1964.

Council of Educational Facility Planners. Guide for Planning Educational Facilities. Columbus: Council of Educational Facility Planners, 1969.

Educational Facilities Review Series. ERIC Clearinghouse on Educational Management, University of Oregon, Eugene, Oregon.

Englehardt, Nickolaus L. Complete Guide for Planning New Schools. West Nyack, N.Y.: Parker Publishing Co., 1970.

Gage, George Joel. Synthesizing the Physical Implications of Innovative Concepts, Practices, and Ideas in Educational Systems: A Design Process for a School Facility, Year 2001. Unpublished dissertation. Los Angeles: University of California, 1972.

Illuminating Engineering Society. Lighting Handbook. New York: I.E.S., 1959, or latest edition.

Peña, William M; Focke, John W. Problem Seeking: New Directions in Architectural Programming. Houston: Caudill Rowlett Scott, 1969.

3. Codes

Life Safety Code No. 101, National Fire Protection Association, 60 Batterymarch Street, Boston, Mass. 02110, 1970.

National Electrical Code No. 0, N.F.P.A., 60 Batterymarch Street, Boston, Mass. 02110, 1965.

Board of Fire Underwriters, National Building Code. Boston, Mass. 02110, 1965.

Building Officials' Conference of America

Basic Building Code

State Codes
(e.g., California Code)

B. SOURCES TO CONSULT FOR INFORMATION ON FACILITIES FOR CAREER EDUCATION

1. Associations

American Association of School Administrators
1801 N. Moore Street
Arlington, Virginia 22209

American Vocational Association, Inc.
1510 H Street, N.W.
Washington, D.C. 20005

The Center for Vocational and Technical Education
The Ohio State University
1960 Kenny Road
Columbus, Ohio 43210

Council of Educational Facility Planners
29 West Woodruff Avenue
Columbus, Ohio 43210

Educational Facilities Laboratories, Inc.
477 Madison Avenue
New York, New York 10017

National Association of Elementary School Principals
1801 N. Moore Street
Arlington, Virginia 22209

National Association of Secondary School Principals
1904 Association Drive
Reston, Virginia 22070

National Association for Occupational Education
North Carolina State University
P.O. Box 5096
Raleigh, North Carolina 27607

National Education Association
1201 16th Street, N.W.
Washington, D.C. 20036

California, Georgia, New Jersey, New York, and most other states have published state facility planning guides. Write to the state departments of education or public instruction.

2. ERIC Clearinghouses

ERIC Clearinghouse in Career Education
Northern Illinois University
College of Education
204 Gabel Hall
DeKalb, Illinois 60115

ERIC Clearinghouse on Educational Management
University of Oregon
Eugene, Oregon 97403

3. Journals

Education:
American Education
American School and University
American School Board Journal
Career Education Digest
Council of Educational Facility Planners Journal
Educational Technology
Industrial Arts and Vocational Education
Industrial Education
Journal of Educational Data Processing
The Nations Schools
School Management
School and Community
School Shop
Social Education

Architecture:
American Institute of Architects Journal
Architectural Forum
Architectural Record
Progressive Architecture

4. Indexes

AIM/ARM
Architectural Index
Art Index
Avery Index to Periodical Literature
Dissertation Abstracts
Education Index
Housing and Planning References
Monthly Catalog
Public Affairs Information Service
Resources in Education (RIE) and Current Index to Journal in Education (CIJE)
Social Science Citation Index

C. ANNOTATED WORKS ON FACILITIES FOR CAREER EDUCATION

Brubaker, C. William. Facility Options. Michigan Career Education Facilities Project, Spaces for Career Preparation Series. No. 3. Columbus, Ohio: Council of Educational Facility Planners. 1973. 19 p.

It is now recognized that education can take place throughout the community, utilizing a wide variety of structures, old and new, traditional schools and other buildings. Options, particularly continuing options, are stressed in this document. Some of the alternatives discussed are: (1) the center concept for concentrated career preparation activities; (2) the multi-center concept providing multilocational network of facilities, both new and existing; (3) the nucleus and satellites concept in which central programs are supplemented by a network of community workplaces which use a variety of existing spaces which change with the needs; and (4) the total integration with the community utilizing primarily existing structures wherever they exist in the local area. Types of facilities discussed are recycled existing educational facilities, recycled existing non-educational facilities, mobile facilities, and movable structures. As for which options are best, Brubaker declines to answer, stating that we don't know and won't know. "We can only say that options should be kept open..."

Molloy, Larry. Places and Things for Experimental Schools, a joint report from Educational Facilities Laboratories, Inc., and Experimental Schools, 1972. 134 p.

According to the author, although information is available on current developments in the planning and use of educational facilities, it is dispersed among so many resources that it is difficult and time consuming for a citizen, whether student, public official, planner or educator, to find out what is going on. This publication gathers up the scattered information on all the lively facilities topics and complements it with names and addresses of prime information sources so that readers can pursue their particular needs and interests. This book, an excellent place to begin a search for information on any innovative school facilities project, covers found space, modernization, open plan environments, school space in the community and reachout schools. Sections on furniture and planning procedures complete the study.

Finsterbach, Fred C.; McNeice, William C. Creative Facilities Planning for Occupational Education. Berkeley Heights, N.J.: Educare Associates, 1969. 259 p. ED 046 123. 2 vols.

This document, designed as a comprehensive manual to aid planners of vocational facilities, was published before the concept of career education was introduced. It includes sections on surveys to assist the planners with establishing educational needs, designing a facility to meet educational specifications, curriculum development, contracts bidding procedure, data requirements, and other legal matters; aids, techniques, and tools for the planner including models and templates. Fifty shop and laboratory layouts interpret educational concepts, equipment needs, and services into functional units for architectural adaptation. The second volume presents templates of scaled equipment silhouettes for use as models in designing facilities.

Meckley, Richard F. Planning Facilities for Occupational Education Programs. Columbus, Ohio: Charles E. Merrill Publishing Co., 1972. 161 p.

Written for planners of occupational education facilities, important planning steps from the survey of needs to submitting the proposal, planning the program and instructional areas, and final building occupancy are discussed. Stress is on building a new self-contained occupational educational unit rather than adapting all or part of an existing structure to the needs of the occupational education program. Included are sample survey forms, checklists to guide the planner, and selected floor plans.

Nerden, Joseph T. Vocational-Technical Facilities for Secondary Schools: A Planning Guide. Columbus, Ohio: Council of Educational Facility Planners, 1970. ED 043 102. 46 p.

This guide, a companion volume to "A Guide for Planning Community Junior College Facilities," was developed by the Council of Educational Facility Planners under contract with the Office of Education. Topics covered included: concepts of vocational-technical education, effects of Federal legislation, patterns of vocational-technical education, a chronological sequence of steps for planning a secondary level vocational-technical education facility, alternatives in affecting economy in building and equipping a school, factors affecting design and usefulness (adaptability, selection of equipment, laboratory design), soundproofing, lighting and more. Survey forms to assist in establishing need for a facility and a bibliography are included.

Oregon Board of Education. Career Cluster Facilities Guide. Salem, Oregon: State Department of Education, 1973.

In 1970, the Board of Education in Oregon published a policy statement on career education which outlined a career cluster concept for Oregon schools. This guide is intended to aid administrators, school boards, teachers, and architects in adapting new space or planning new buildings for these career education programs. Space diagrams, diagrams showing relationships among activities, and cluster descriptions are provided for each of thirteen clusters. Descriptions include typical occupations, instructional areas, related courses, and the zones of activity (laboratory zones, support zones, etc.).

Ressler, Ralph. Career Education: The New Frontier. Worthington, Ohio: Charles A. Jones Publishing Co., 1973. 147 p.

Primarily devoted to introducing concepts of career education into the existing curriculum with as little disruption as possible, much of the book is about the role of career education, historical background, and curriculum. Chapter Six, which deals with elementary career education facilities, discusses three alternatives for establishing a space where children can participate in hands-on or try-out career activities: classroom centers, school centers (including mobile units), and career center laboratories. Advantages and disadvantages are discussed for each. Little aid is given to the planner of secondary school level programs. A useful list of selected readings is appended.

Shelton, E. H. and Company. Career Education Guide. Muskegon, Michigan: E. H. Shelton, 1974. 156 p.

This guide is designed to assist administrators, teachers, and architects plan career education facilities. The emphasis is on furniture and equipment available through Shelton. Sixty typical layouts of graphic arts shops, foods preparation areas, and rooms for application repair, auto body repair, etc., are shown. An extensive supplemental section with line drawings of built-in and major freestanding furniture and equipment, complete with descriptions and dimensions, is included. As with other books on facilities, tools and small equipment items are not included. The emphasis is on secondary and post-secondary education; there is little here for elementary level career education planners.

Smith, Linn. Construction Options. Michigan Career Education Facilities Project, Spaces for Career Preparation, No. 5. Columbus, Ohio: Council of Educational Facility Planners, 1973. 14 p.

New concepts have been developed for the construction of public buildings: systems and fast tract construction. Systems utilizes a planning module, usually 5' x 5' for schools, and it integrates a series of parts, many of which are specially designed products for systems use, in a logical and rational manner.

The fast track or phased construction process reorganizes the steps involved so that early decisions and actions can be taken on portions of the project, planning completed and construction started while detailed work continues on the remaining portions. Both of these concepts can be applied to new and recycled buildings.

Tarapata, Peter. Planning for Change. Michigan Career Education Facilities Project, Spaces for Career Preparation, No. 4. Columbus, Ohio: Council of Educational Facility Planners, 1973. 9 p.

The design of new flexible facilities for career education is approached through the concept of space management, which is the art and/or science of managing people, time and money to most effectively use available space. In a school, it is the process of matching students' learning needs (curriculum) with the things of learning (space, tools, aids), placing them within a time frame (schedule) and doing this all within an allotted budget. Suggestions and building designs are presented for flexible facilities into which an almost infinite variety of settings can be placed without destroying the universal quality of the space.

Woodruff, Alan P. Career Education Facilities; a Planning Guide for Space and Station Requirements. New York: Educational Facilities Laboratories, Inc., 1973.

The purpose of this publication is to provide the educational planner and the architect with some suggestions concerning models by which they may plan new flexible-use shared-space facilities and to support these models with guidelines for the development of facilities and educational programs for occupational education. Financial advantages of space and equipment sharing are discussed. Ten career clusters are presented as examples of facility planning. Each includes a general discussion of program and space relationships; an identification of the individual stations and areas within each of the cluster laboratories and of the relationships between these stations and the shared services of the laboratory and the cluster as a whole; and a table of space requirements for most of the individual stations required in each laboratory.

Clusters: building trades; business, office occupations and merchandising; electricity and electromechanics; graphics and communication arts; heating, ventilation, air conditioning and refrigeration; medical-dental; metals and materials fabrication; public service; science and technology; vehicle maintenance.

West Virginia Department of Education. Office of School Facilities Planning. Handbook on Planning School Facilities, and Vocational Education Supplement. Charleston, West Virginia: Department of Education, 1973.

Numerous states publish handbooks and guides to assist planners with site selection and school facilities planning. West Virginia has developed a detailed guide including school site selection, planning of elementary and secondary school facilities, school facility safety, service facilities and environmental factors. Standards and design specifications for facilities designed for business education, industrial arts, vocational agriculture, distributive education, and vocational health occupations are included (size, capacity, location, activities, equipment, facilities, etc.).

Additional information intended to guide school officials with the planning of facilities for vocational and technical information is included in the supplement. Although intended primarily for West Virginia teachers, administrators, architects, and building specialists, this guide also charts the sequence of various planning activities which will be of interest to planners from other states.

D. NAMES AND ADDRESSES OF SITE CONTACTS

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45 Lyon Terrace
Bridgeport, Connecticut 06604

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Dade County Public Schools
1450 N.E. Second Avenue
Miami, Florida 33132

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Mr. Robert Rammes
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Dayton, Ohio 45402

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Dr. Robert Peterson
360 22nd Street, 8th Floor
Oakland, California 94612

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Mr. Gary Williamson
Harbor Heights Elementary School
Peninsula School District #401
Route 3, Box 3330
Gig Harbor, Washington 98335

Masonry Trades
Mr. William J. Edwards
Mason Industry Training Center
5983 Smithway
Commerce, California 90040

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Los Angeles, California 90049

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Franklin School
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Syracuse, New York 13208

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6836 N. 58th Drive
Glendale, Arizona 85301

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Mr. Charles Judd
Highline School District
15675 Ambaum Boulevard, S.W.
Seattle, Washington 98166

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